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The IRON AGE

FEBRUARY 3, 1949

DEL 601
TOMATIC SCREW MACHINE
MODEL 86
AUTOMATIC CHUCKING MACHINE
MODEL 37 CONTOUR
BORING & TURNING MACHINE
MODEL 65
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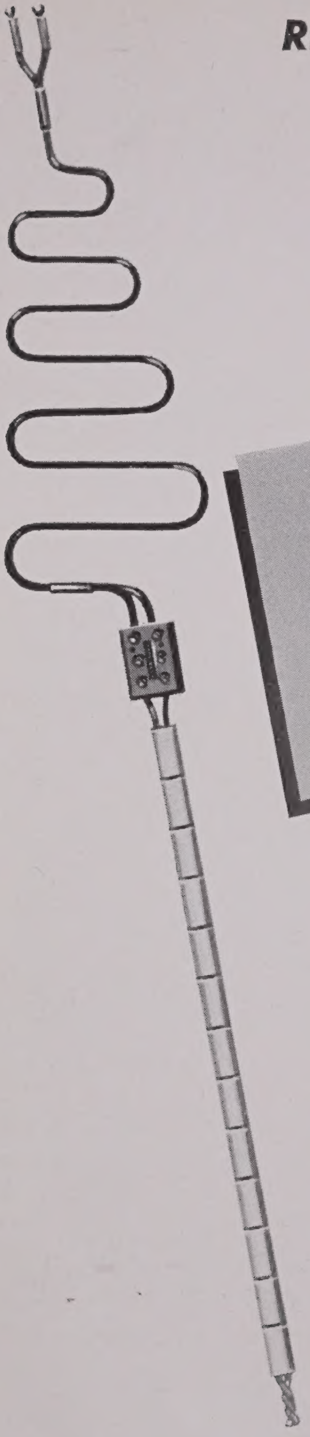
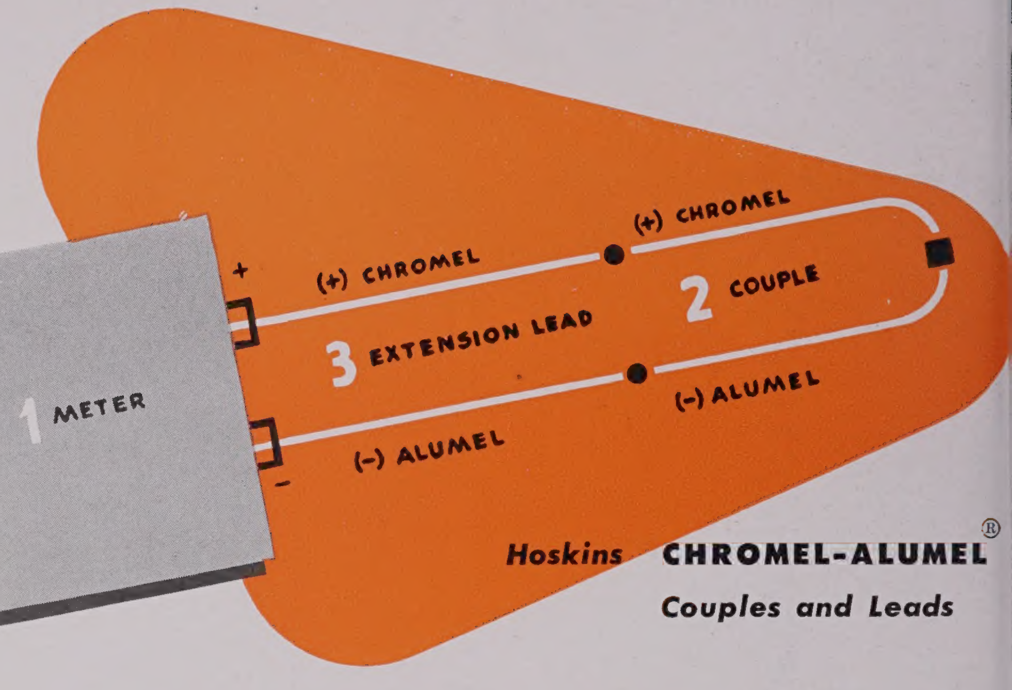
Right Combination for **ACCURATE TEMPERATURE MEASUREMENT**





Hoskins **CHROMEL-ALUMEL**®
Couples and Leads

If you're concerned with accurate temperature measurement in your heat treating operations, you'll do well to check your meter installations against the diagram shown above. It means simply this:

(1) Make sure your pyrometers are of recent manufacture . . . precision built . . . capable of accurately registering true temperature—EMF values . . . and calibrated for dependably accurate Chromel-Alumel Thermocouples.

(2) Standardize on durable Chromel-Alumel Thermocouples. They're highly responsive to temperature fluctuations . . . so resistant to oxidation you need not pack the protection tube. And they carry a positive accuracy guarantee of ± 5°F. from 32° to 660°F., and ± ¾% at temperatures above 660°F.

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Our Catalog M[1] tells the complete technical story . . . and additional reference can be found in the following Bureau of Standards Research papers: R.P. 767—"Standard Tables for Chromel-Alumel Thermocouples"; R.P. 768—"Methods of Testing Thermocouples"; R.P. 1278—"Stability of Base Metal Thermocouples in Air at 800° to 2200°F."

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nickel-chromium wire
®

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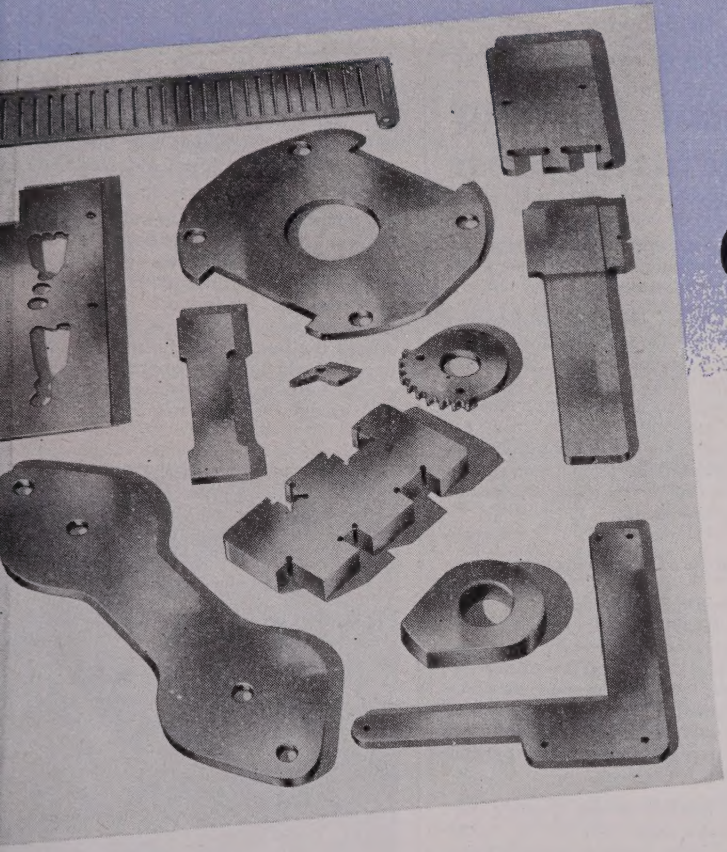

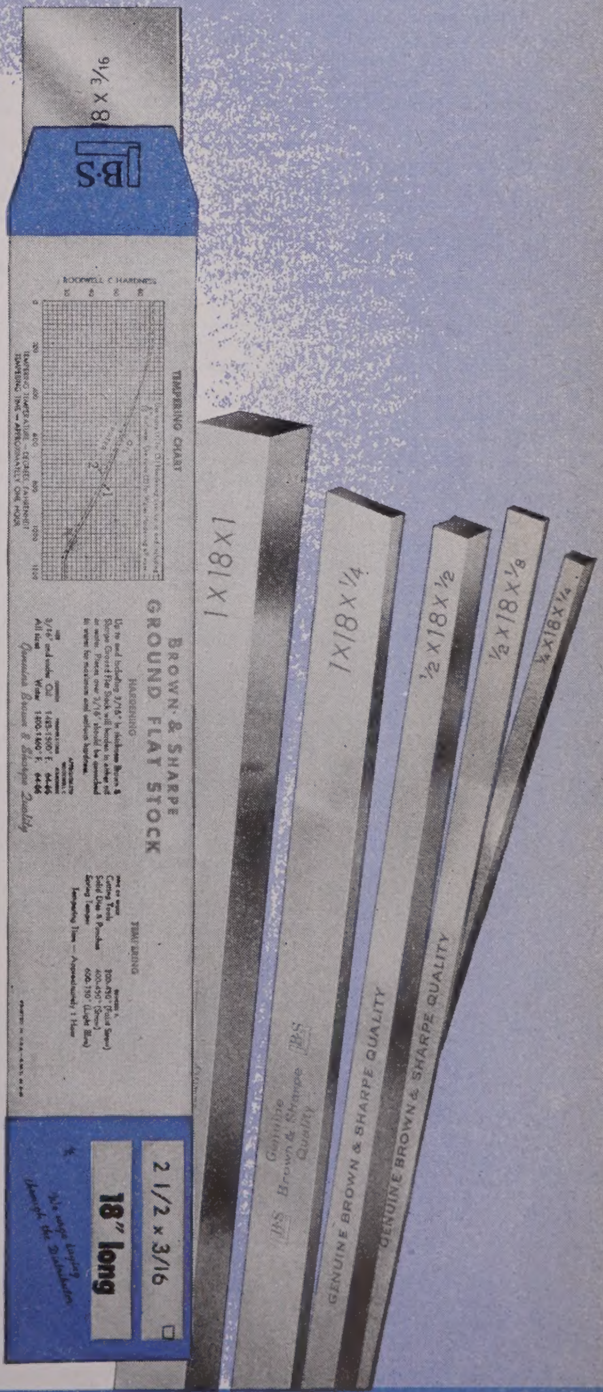
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COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by Bridgeport Brass Co. "Bridgeport" BRASS CO. *Headquarters for BRASS, BRONZE and COPPER*

Cold Heading for Precision and Economy

Silicon Bronzes Ideal for This Process

Improved cold heading machines today allow mass production of parts of great strength and precision with minimum material waste and labor costs. These new machines, products of a continued effort to conserve material and reduce manufacturing costs, are claimed to have greater rigidity and accuracy. Increased versatility of such equipment opens a range of work that seems limited only by the ingenuity of the die designer, and the ability of cold heading wire to flow to the desired shapes.

With softer metals, this is no problem. Where the finished part must develop strength of the order of 100,000 psi, however, an unusual combination of ductility and strength is necessary. No mean order, such requirements have been anticipated in non-ferrous metallurgical research.

Bridgeport silicon bronzes, for example, offer the manufacturer high strength in the hard drawn condition combined with remarkable malleability. When properly made from Bridgeport's Silicon Bronze 609, cold upset items do not require heat treatment to relieve stresses. Finished parts are exceptionally strong, resistant to wear and fatigue and free from stress corrosion cracking.

High Strength Fasteners

The most common application is the manufacture of screw products, such as cap and machine screws, bolts, nuts, and components for split bolt connectors. Hard drawn silicon bronze wire with a tensile strength ranging from approximately 75,000 to 90,000 psi is cold upset without intermediate annealing operations. Threading is generally done by the cold rolling process. Large headed bolts averaging over 100,000 psi are common for most sizes. This value is remarkably high as compared to low carbon steel, and explains the wide acceptance of non-rusting high strength silicon bronzes for such engineering applications.

The versatility of modern cold-heading machines, and the variety of alloys available, make possible production of a wide range of parts. They may range in sizes from tiny rivets to large bolts. Among other items are valve stems, radiator tubes, segment gears and innumerable others. The accompanying photograph illustrates but a few of the many thousands of items that are made.

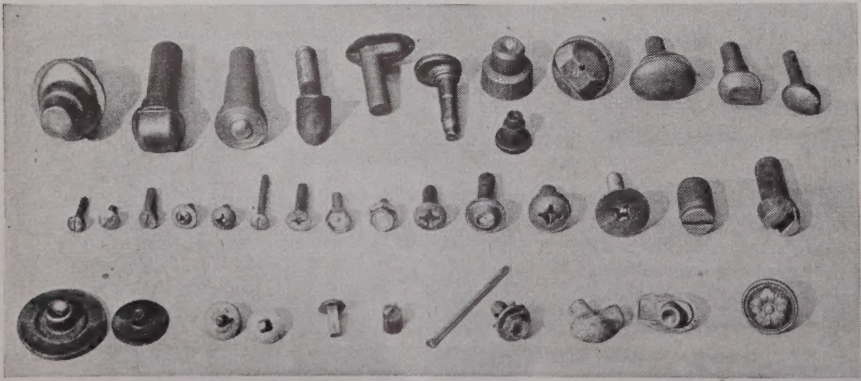
Economy of Manufacture

In cold heading, high production rates are achieved easily. No extra stock need be provided, thus saving material by reducing trim scrap. Threads can be cold rolled, saving machining time as well as scrap loss. Virtually all the metal is used, and the finished cold headed part is often more accurate and stronger than a comparable machined part.

Obviously, quality of the finished part depends as much upon the wire or rod alloy as the machines. Surface imperfections, for example, are magnified greatly by the deformation involved in upsetting large heads. Material with the proper ductility, surface and temper is vital to insure uniform distribution of stock in the finished part and minimum of scrap from breaks in the surface. This is necessary whether head and shank are concentric or offset. Heading wire, therefore, must be more carefully processed from casting to finished size than wire used for other applications.

Aside from silicon bronzes, brass wire alloys are widely used for the manufacture of the many varieties of regular and special screws used in industry, and especially for electrical wiring devices and appliances, as well as for rivets, truck tire valves, valve stems, etc. Brass is an excellent base for lasting and attractive plated finishes, such as nickel and chromium as well as gold and silver for decorative purposes.

The manufacturer who wants to gain the full quality and economy benefits from this method of fabrication can get much help from our laboratories at Bridgeport and Indianapolis. Bridgeport makes a specialty of supplying wire and rod of the proper temper, surface finish and composition for cold heading operations. We will gladly help in the selection of the alloy best suited to specific needs.



These unusual jobs are produced on two-blow headers. Off-center shapes, odd shapes, and parts requiring uneven distribution of stock and slots are possible on this type of equipment. Courtesy National Machinery Co., Tiffin, Ohio.

Bridgeport makes many cold heading alloys in wire and rod form of the temper, finish and composition needed for high quality and economy of production.

Standard Cold Heading Alloys

A number of alloys of special physical and chemical properties have been developed to meet cold heading needs. Below ⅝" in diameter, these are generally supplied in coiled material; above that dimension, in rod, to eliminate severe straightening operations.

Silicon Bronze 609—(Approx. 98% copper, 2% silicon). Especially resistant to stress corrosion cracking. Exceptionally malleable even in hard-drawn condition. Tensile strengths of finished bolts average 100,000 psi. Fine for outdoor use in pole line hardware, wire and cable clamps, water meter bolts and nuts, marine hardware, etc.

Silicon Bronze 609—(Approx. 98% cop-copper, 1.4% tin, and 1% silicon). Similar in physical properties to alloy #609. Resists season cracking and sea water corrosion.

Phono-Electric 840 — (Approx. 98.6% copper, 1.4% tin). Electrical conductivity approximately 40% that of pure copper. Very malleable—stronger than copper. For pole line hardware and electrical parts where strength, toughness, resistance to weathering and good electrical conductivity are needed.

(Continued on Page 2, Col. 2)

COPPER ALLOY BULLETIN (Continued)

FEBRUARY, 1949

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, Research Chemist of the Bridgeport Brass Company.

Galvanic Corrosion in Salt Water

Satisfactory Galvanic Couples (Continued)

Silicon bronze bolts used to fasten together carbon steel sections exposed to sea water have led to no measurable increase in corrosion of the steel. Similarly, silicon bronze brazed joints (small area) in relatively large carbon steel sections are also satisfactory.

Silver brazed joints are widely used for joining copper and copper alloy tubing and piping for use in sea water. The results have been uniformly satisfactory.

Silicon bronze welds (made by gas and carbon arc) joining deoxidized copper, red brass, silicon bronze, etc., also show *no* tendency toward increased corrosion due to the galvanic effect in sea water.

Protective Galvanic Couples

Protection by Solder

Coatings of 60 Lead — 40 Tin alloys (soft solder) are commonly applied to copper piping for protection against flowing sea water. It has been reported by Pomfret and Mosher[1] that wiped coatings of solder on copper give considerable protection at low water velocities but *not* at high velocities.

Some years ago it was thought that a dipped tin coating applied to copper or brass condenser tubing would increase the resistance to corrosion from sea water. Experience has shown that such coating is ineffective and this practice has been largely discontinued.

Rupture of the "tin" or solder coating or pinholes in the coating will lead to accelerated corrosion pitting of the copper in rapidly flowing sea water. Here the coating reverses its polarity with respect to the copper and the resulting active galvanic couple consists of a large surface area of a slightly more noble coating and a small anodic area of copper.

Protection by Zinc

Hot dipped (galvanized) and sprayed zinc coatings on steel give protection to the steel as long as some zinc remains. Zinc plates have also been used to protect steel galvanically, etc. The success of this procedure depends upon continuous dissolution of the zinc and a good electrical contact with the steel. Since a high resistance coating forms on the zinc anode which reduces its effectiveness, frequent cleaning of the zinc is necessary.

---

[1] R. A. Pomfret and L. M. Mosher, Corrosion (N.A.C.E.) 4, 5, 227-43 (1948).

COLD HEADING

(Continued from Page 1, Col. 3)

High Brass 16—(Approx. 65% copper, 35% zinc). Very malleable and ductile, most popular of heading alloys. For machine, wood and cap screws, solid and hollow rivets, special fasteners.

70-30 Brass 37—(Approx. 70% copper, 30% zinc). Slightly more ductile, used for making exceptionally large heads and certain types of hollow rivets.

Low Brass 5—(Approx. 80% copper, 20% zinc). Very malleable, more resistant to stress corrosion cracking and general corrosion. Light golden color—popular for jewelry findings, parts with large upset heads.

Red Brass 85—(Approx. 85% copper, 15% zinc). Very malleable. Good corrosion resistance. Rich golden color. For ornamental jewelry, special rivets and fastenings for vanity cases, lipstick holders.

Commercial Bronze 25—(Approx. 90% copper, 10% zinc). Bronze color, resists season cracking. For fastenings used in outdoor constructions.

Naval Brass 45—(Approx. 60% copper, 0.75% tin, balance zinc). Used for cold heading bolts to U. S. Navy requirements.

Low Leaded Brass 41—(Approx. 63% copper, 0.75% lead, balance zinc). Used where cold heading is followed by drilling, reaming, threading, slotting, and tapping machine operations.

Light Leaded Brass 43—(Approx. 65% copper, 0.3% lead, balance zinc). For operations requiring good cold heading with light machining.

BRIDGEPORT BRASS

Bridgeport also offers many other alloys in different forms suitable to other fabrication techniques of modern industry.

For fast, precision screw machine production with maximum economy, for example, there are a number of excellent alloys in rod form. These include Duronze* III Aluminum Bronze for exacting engineering applications; High Speed Free-Turning Brass; Leaded Commercial Bronze; Naval Brass and Leaded Naval Brass.

Other mill products include brass, bronze, copper sheet and strip for drawing and stamping; condenser tubing in a wide range of alloys and Duplex tubing; bronze welding rod for fabrication and repairs.

Modern mills in Bridgeport, Conn., and Indianapolis, Ind., with a staff of experienced laboratory and production men, are ready to help you with your metal problems.

*Reg. U. S. Pat. Off.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

New Synthetic Enamel Strippers are said to be especially suitable to remove clear synthetic enamels from highly polished surfaces such as brass, gold plate and silver. Non-tarnishing, need not be followed by rinse. **No. 908**

Multiple Fuse contains five fuse links which can be rotated in shell to bring unused link into circuit when one link blows. Inner fuse link unit is replaceable. **No. 909**

New Caulking Material is said to adhere tightly to brass, aluminum, steel, plastics and seal openings and cracks at temperatures between —65° and 500° F. **No. 910**

Two New Cleaning Compounds, supplied as powders for mixture in water in varying proportions depending upon work, are said to clean buffing compounds, oils, dirt from work prior to electroplating. Solution can be used with direct-reverse current cleaning, soak-tank operations followed by reverse current, anodic cleaning and cathodic cleaning. **No. 911**

Die Casting Machine has a cold-chamber hand-ladling head to handle brass, aluminum and magnesium that is interchangeable with a gooseneck plunger and melting pot for zinc, lead and tin. 800-ton pressure, die space 40" to 25" between tiebars, platen movement up to 17½". **No. 912**

New Solderless Terminal, with contact area ¼" x ⅜", combines flat-blade terminal for wiring and female contact member with spring that maintains contact pressure. A dimple and hole prevent accidental disconnect. **No. 913**

Wire Fatigue Testing Machine is said to provide information helpful in controlling wire drawing processes, wire acceptance on basis of fatigue data, predicting wire life in service and determination of safety factors in design. Wire capacity from 0.0005" to 0.030" diameter. **No. 914**

New Metal Forming Process uses dies heated by electric current to neck, seal and upset cylindrical work, which is fed to die and rotated by mechanical and hydraulic pressure. Experimentally, machine has necked 3½" tube with ⅓" wall in 6 seconds. Several capacities from ¾" to 16" diameter. Availability in several months. **No. 915**

Wire-Tying Tool of cast bronze is reported to tighten and tie wire ends in all sizes up to No. 7 in as little as 30 seconds. **No. 916**

Abrasion Testing Machine is said to be useful for testing the abrasion resistance of all types of surface finishes, including electroplate, porcelain enamel, organic coatings, insulating tapes, etc. **No. 917**

Electronic Micrometer makes possible continuous measurements of outside diameter of wire, thread, tubing, rod, etc., and the edge-to-edge dimension of strip stock, etc., at high speed, it is claimed. **No. 918**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL

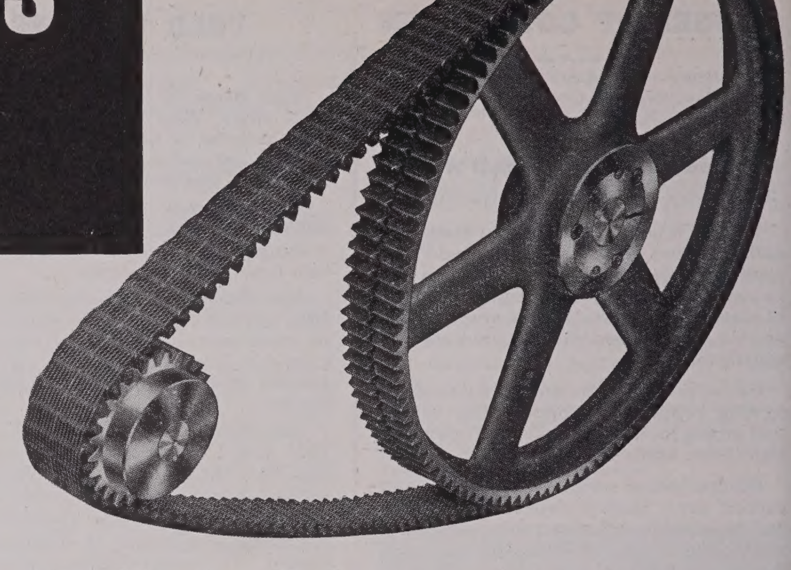
BRIDGEPORT BRASS

BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal

Warehouse Service with Slitting Facilities in Principal Cities

ENDLESS STORY



Morse Silent Chain Drives

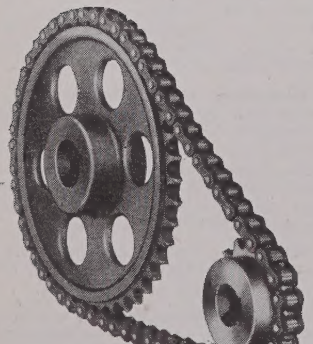
THE STORY of Morse Silent Chain Drives is an endless one of efficiency, low cost and positive power transmission.

Perhaps the most effective known means of transmitting power between shafts, Morse Silent Chain is quiet, smooth, and dependable. Considered by engineers as flexible gearing, it has been used to transmit 5000 h.p. in a single drive; speeds have sometimes exceeded 8000 FPM. At high velocities, Morse Silent Chain Drives utilize centrifugal force to distribute driving effort over a greater number of teeth, reducing impact, wear, and noise.

Part of the story of the operating economy and long life of Morse Silent Chain Drives is found in the famous frictionless rocker joint. Employing essentially a simple rocking-chair action, Morse Silent Chain contact is confined to rolling instead of sliding action. Less heat is developed, enabling the drive to transmit heavy loads at high speeds without overheating.

Simple to connect or disconnect, Morse Silent Chains can be installed or removed without dismantling machines on which they are used. Chain length is easily and quickly adjusted for any center distance, and speed ratio changes can be readily accomplished. The initial cost of Morse Silent Chain Drives is surprisingly low, and their high efficiency and frictionless joint design assures the lowest operating cost per hour and low maintenance outlay.

Why not check the Morse Silent Chain story more completely? Write for catalog C71-48. Morse Chain Company, Dept. 305, Detroit 8, Michigan.



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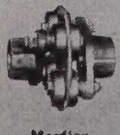
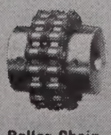
Morse Roller Chain Drives • A low-cost, positive, efficient, flexible drive for use under rigorous operating conditions, Morse Standard Roller Chain is applicable to a wide range of installations and is available in all American Standard pitches and widths.



Morflex Couplings



Roller Chain Couplings

Silent Chain Drives

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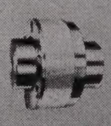

Morflex Radial Couplings

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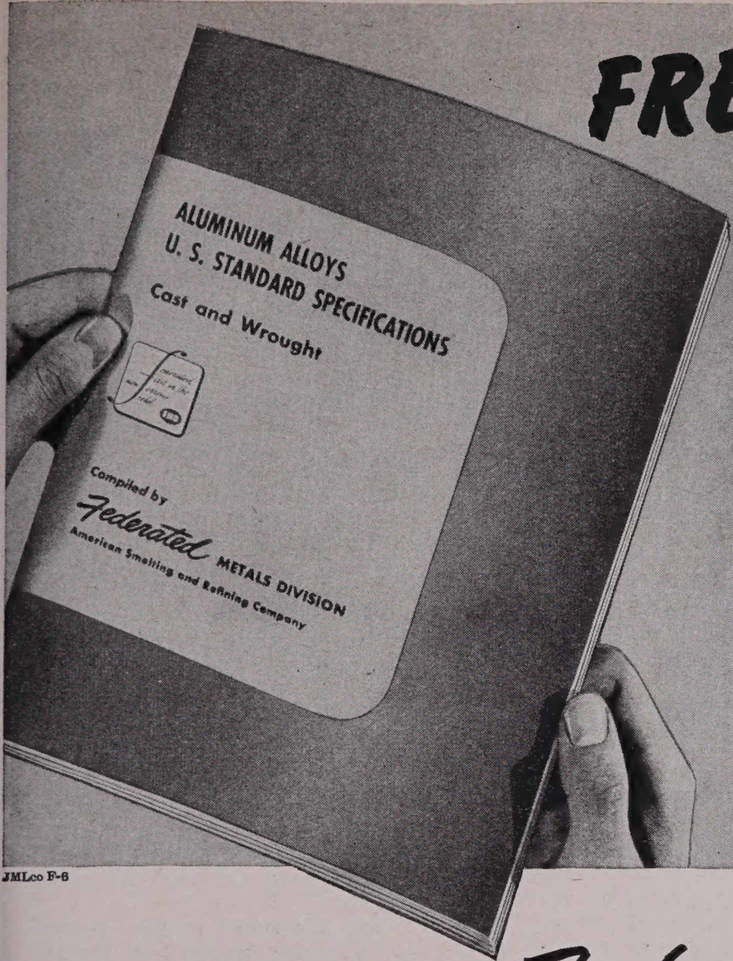
FREE Handbook of Aluminum Specifications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Fatigue Cracks

BY C. T. POST

Gay Blades

• • Some of the nation's best minds have been working on the domestication of earth-moving equipment. Not content with having verified the existence of bulldozers, cowdozers, and calfdozers, your f.f.j.'s loyal readers are straining to increase the tie between the animal kingdom and the metalworking world.

"Out west here we have 'cat-skinners'. How many of your readers would recognize one?" challenges E. M. Herron of the Oakland, Cal., Central Bank.

Probably the reader who suggested "kitty-pillar" was only kitting, but we'll keep his name a secret lest he be pun-ished.

Ever since Alexander Botts and Gilbert Henderson started hawking Earthworm tractors in competition with Behemoths, the Caterpillar Tractor Co. has had a strong hold on the popular imagination. In the early days Caterpillar used to push its name to the hilt. Even the trade-mark had an up-and-down wiggle, prominently displayed in all its advertising. If memory serves, this device disappeared about the time William Hazlett Upson left Caterpillar and started writing about Botts in the Saturday Evening Post. Probably someone thought it was corny, for Caterpillar's ads now are just as slick as a thousand and one others in the mass publications and we can't seem to recall any distinguishing features.

The "cat-skinner," as Mr. Herron is probably aching to tell us, was born in the driver's seat of a Caterpillar tractor about the same time as Caterpillar, itself, was sired by a union of the old Holt and Best tractor companies. He literally snapped the whip with his Caterpillar tractor, roaring up and down the hilly California orchards, through the spongy delta asparagus fields, and finally, as Henry Kaiser branched out from road building, became a symbol of efficiency in construction camps the world over. R. G. Le Tourneau had a hand in making the cat-skinner a man to reckon with, too. Le Tourneau's skill and imagination with weldments, starting way back in the days of a little welding shop in Stockton, Cal., sparked the development of the huge earth-moving machines that teamed up so well with the track-type tractor. The cat-skinner is no mere tractor driver, but a man to behold—an aptronym if there ever was.

Cash To Burn

• • Your favorite family journal's scrap reporters have been downright smug about the accuracy with which they followed prices up to stratospheric levels reached last year. Not to dispel any illusions now that the boom is waning, but we never saw mention of a scrap charge made out at Colorado Fuel & Iron Corp. which ran about \$3500 a ton, face value. If the steel had been rolled into line pipe, it would be understandable, but the ingots went over to the rail mill.

One day last year, Moses E. Smith, superintendent of the Denver mint, rang up Len Rose, C. F. & I.'s director of purchases, and the two of them cooked up the most expensive scrap deal yet recorded. Since May, 1946, the mint had been saving its pennies—the zinc plated steel pennies that circulated during the war. It had 6,844,636 of them. Not being averse to making an honest dollar, Smith asked Rose if he would like them for scrap. Rose turned a sample penny over to Harry George in the lab, who came up with an analysis of 93.50 pct Fe, 0.90 pct Zn, 0.35 pct Mn, trace Cu, trace Ni, no Cr or Sn.

Bill Carpenter, process control metallurgist, decided that the \$68 thousand would make as good a melt as any other light scrap, with the zinc coating volatilizing off. Taking no chances, the mint had mutilated the pennies as they accumulated by running them through grooved steel rollers. They arrived at the Pueblo mill last month with a heavily armed escort, and were charged with considerable ceremony.

P.S.—C.F. & I. got a slight discount from the face value.

Ahead With the Atom

• • When you are paying your income tax this year, don't feel too badly about the portion that goes to atomic research. The Oak Ridge plant is really pushing ahead. Even if it doesn't make the world safe for democracy, it's making it a better place to live for trout, oysters, and clams. After clearing with the usual 20 censors, the government Fish and Wildlife Service whispered out of the corner of its mouth the other day that, courtesy of the Oak Ridge Institute of Nuclear Studies, plans were underway to use radio-isotopes in studying metabolic processes of t., o., and c. The enemy will give up for sure when we send an atom-charged oyster battalion out after those new subs.

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FOR 90% OF YOUR MACHINING:

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- ✓ MILLING
- ✓ PLANING
- ✓ AUTOMATICS

and for Drawing, too!

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R. D. Wood Company
EST. 1803

Dear Editor:

CHROMIZING

Sir:

We understand that some years ago you published articles dealing with a method of alloying chrome to steel surfaces. We believe these dealt with German developments for the heating of ordinary steel articles in a chromium atmosphere or immersed in a mixture of finely-divided ceramics and chromium salts. We would appreciate hearing from you whether or not these articles can be obtained.

F. L. HAYDEN
Works Manager
Steel Co. of Canada, Ltd.
Hamilton, Canada

● You probably mean the article "Warborn Steelmaking Problems Studied" from the Oct. 22, 1942 issue. Our supply of tear sheets on this has been exhausted, but you can have photostats made at one of the technical libraries. You will also be interested in the article "Chromizing at 1700° to 1850°F" in the Jan 27 issue which describes another method for chromizing, said to be adaptable to conventional carburizing equipment.—Ed.

ALUMINUM ROLLING MILL

Sir:

We should appreciate your giving us information for an inquiry we received from our office in Canton, China. They are interested in a complete plant for rolling aluminum sheets and for stamping out and spinning sauce pans, frying pans and other kitchen utensils. They are especially interested in rolling mills and have advised that the finished sheet width should not be less than 24 in. We should like to ascertain the types of machines needed and a few sources of supply.

R. S. WEISBARD
Assistant Manager
Jacques Azadian, Fils
New York

● The names of a number of companies supplying rolling mills and stamping and spinning machines have been sent. They can advise you as to the exact units required for the operations.—Ed.

F. O. B. MILL

Sir:

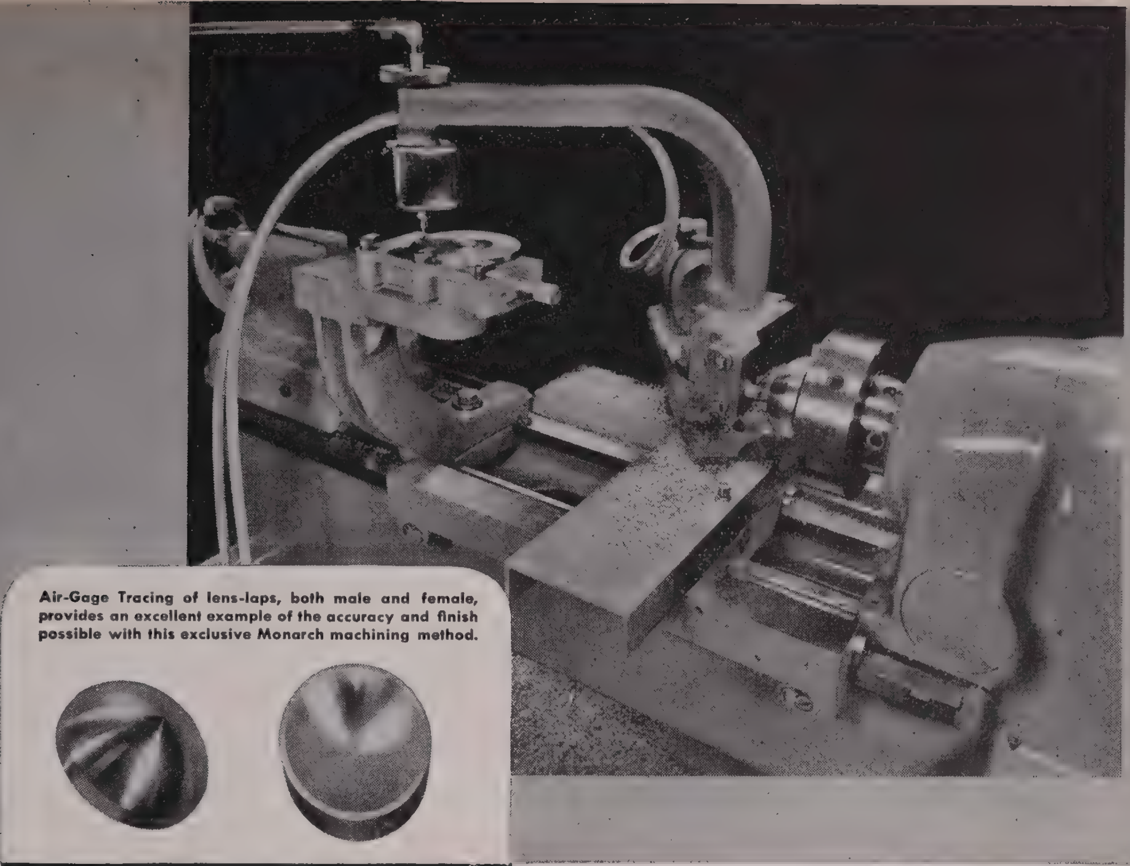
We would appreciate receiving for our library several copies of the article entitled "F.O.B. Mill" which appeared in the Jan. 6 issue.

A. R. JENNINGS
Federal Trade Commission
Washington

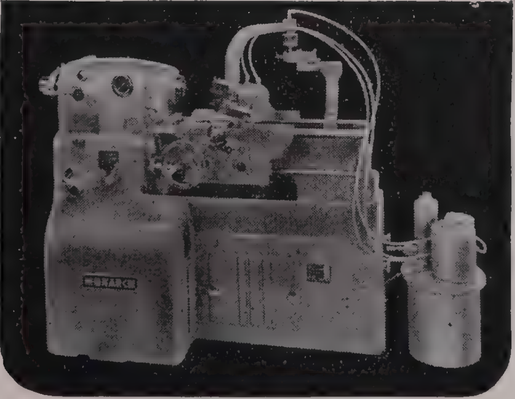
MOTION-TRANSFORMER

Sir:

Reference is made to the article covering a new motion-transformer in the Feb. 28, 1946 issue. There is a possibility that we can use equipment



Air-Gage Tracing of lens-laps, both male and female, provides an excellent example of the accuracy and finish possible with this exclusive Monarch machining method.



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President

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of this kind, and we would appreciate receiving additional information on the equipment.

C. C. ERICSON
Purchasing Agent
Rockford Screw Products Co.
Rockford, Ill.

● All patent rights for the mechanism were assigned to the Utah Scientific Research Foundation, Logan, Utah. E. G. Peterson, executive director of that group, will give you further information.—Ed.

COLORING STAINLESS

Sir:

Please inform us if you know of a process for staining or coloring stainless steel.

E. BEEDE
Keene Valley Engineering Co.
Homer, N. Y.

● Coloring is generally applied by spray gun, using high quality bakelite lacquers. The front of the Air Lines Terminal on 42nd Street in New York is an example of stainless steel colored by this method. Tear sheets of the article "Colored Stainless Steel" from the April 6, 1939 issue, describing the process have been mailed. Although written in 1939, it is fully up-to-date.—Ed.

STEEL MILL SCENE

Sir:

In looking through the Jan. 6 issue, we were particularly attracted to the color drawing "Night Scene in a Steel Mill." We would like very much to obtain this picture for our offices and would appreciate your advising if that is possible and the cost.

L. D. KOMIE
President
Lenso Corp.
Chicago

● A limited number of reprints, suitable for framing, are available gratis. Your copy is on its way.—Ed.

GREASY FOOTPRINTS

Sir:

I'm in the doghouse at home because my shoes leave greasy footprints on our carpets. That's because no one has yet invented a satisfactory substitute for quenching oil. Oil is a fire hazard, it smokes, it is hard to cool, it clings to the quenched work so that carryoff drips on the shop floors, etc.

I suggest a research project to develop a better quenching medium. It must be constant in quenching rate, easy to cool, fireproof, low in carryoff—and the carryoff should be harmless in tempering furnaces. Some one can make a fortune in a hurry, if the job can be done.

Spring Manufacturer
Chicago

IMPREGNATING VARNISH

Sir:

We would like to find a varnish that could be used to impregnate aluminum castings. The varnish we

TINNERMAN
Speed Nut
SAVINGS STORIES

"The Omaha Incident"

PROVES ANOTHER ADVANTAGE OF SPEED NUTS* TO GRAND HOME APPLIANCE CO.

A few months ago, Grand Home Appliance Co., Cleveland, Ohio, shipped a carload of their new Grand Gas Ranges to an Omaha distributor.

The ranges were attached to their crates with conventional nuts, bolts and washers. For test purposes, however, six of the units were secured to their crates with Tinnerman's new Crating SPEED NUTS.

As it turned out, the distributor found most of the units had been damaged in transit and he had the entire shipment returned to Cleveland. When Grand inspected the carload, they found that all but six of the ranges had vibrated loose from their crates and were extensively damaged. These six, still in perfect condition, were the units that had been tightly secured with Crating SPEED NUTS!

It's easy to see why Grand Home Appliance Co. is now using more and more SPEED NUTS. What about your fastening problems? Perhaps Tinnerman can help you solve them. Send for details on our Fastening Analysis Service . . . now. Tinnerman Products, Inc., 2040 Fulton Road, Cleveland, Ohio. Sales offices in principal cities.

In Canada: Dominion Fasteners Limited, Hamilton
In England: Simmonds Aerocessories, Ltd., Treforest
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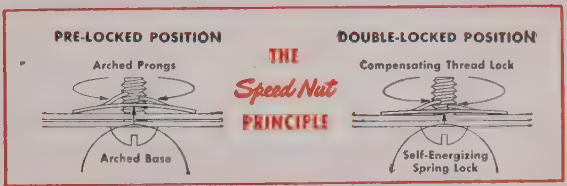
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Arched Base
THE Speed Nut PRINCIPLE
DOUBLE-LOCKED POSITION
Compensating Thread Lock
Self-Energizing Spring Lock

The lower section of a Grand range, shown at left, is being secured to the crate base with four Crating SPEED NUTS. This operation requires only one quick application of power tool to part.

Revolutionary, self-locking SPEED NUT C6888. Ends shipping damage caused by vibration . . . cuts material costs . . . saves time, work and money.

TINNERMAN Speed Nuts

*Trade Mark Reg. U. S. Pat. Off

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made by the Kaufman Process
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KAUFMAN DOUBLE EXTRUSION PROCESS
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CAP SCREWS, SET SCREWS, MILLED STUDS
Ask your jobber for Cleveland Fasteners

use at present does not dry completely when it is baked with the result that, over a period of months, it continues to dry and fumes from it are deposited on adjacent glass parts causing the glass to deteriorate. We would appreciate any information you can give us on varnishes that would not have these disadvantages.

ALBERT BANICK
Specialties, Inc.
Syosset, L. I., N. Y.

● Tear sheet copies of a number of articles on such sealants have been sent. Also the names of manufacturers of the compounds and varnishes have been included. You can get additional information from them.—Ed.

CADMIUM PRODUCERS

Sir:

Is it possible for you to give me information on the domestic companies which are the principal producers of cadmium metal? Also can you give me the names of a few large foreign companies producing the metal?

ROBT. A. PAULSEN
Oak Park, Ill.

● Lists of both foreign and domestic producers, as well as secondary smelters in this country, are in the mail.—Ed.

CORRECTION

Sir:

With reference to the article "Dry Lime Treatment of Waste Pickle Liquor" which appeared in the Jan. 20 issue, the author wishes to call attention to a correction beginning with the third sentence of the fourth paragraph from the end. The correction should read: "A practical lime slurry containing 15 pct by weight solids will consist of approximately 2½ lb of water for each 1/3 lb of lime; or in other words, about 1000 gal of tramp water will be added," etc. This correction automatically requires some additional corrections in the subsequent text although the thought expressed in the text is not altered by the correction. The author sincerely apologizes for not having found this obvious error before the article went to print and he will be pleased to supply the corrected text to anyone desiring same.

C. J. LEWIS
Technical Director
Warner Co.
Devault, Pa.

FOUNDRY PIG IRON

Sir:

Will you be good enough to send us a list of the producers of No. 2 foundry pig iron in the middlewest?

SAM ESSTMAN
General Manager
Esstman Co.
St. Louis

● A list of foundry pig iron producers in that area has been mailed. The individual furnaces may not all be operating on foun-

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¼" to 4" O. D. 9 to 22 gauge

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MOVE MATERIALS
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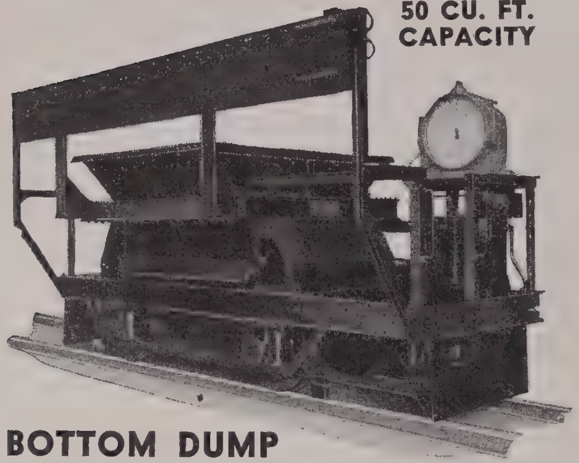

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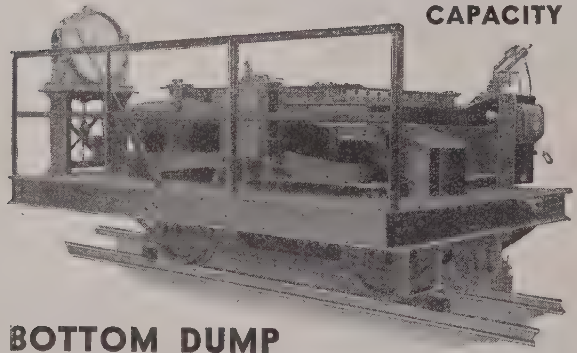

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SCALE CAR

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THE ATLAS CAR & MFG. CO.
ENGINEERS MANUFACTURERS
1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

dry iron at the present time, but the list will give you the maximum number of possible sources.—Ed.

STEEL CAPACITY

Sir:

I would appreciate receiving six tear sheet copies of each of two articles in the Annual issue, Jan. 6. These are the articles "World Steel" and "Steel Capacity."

E. K. CLARK
Asst. Sales Promotion Mgr.
Republic Steel Corp., Export Dept.
New York

WELDING

Sir:

Would you kindly send two copies of the articles entitled "Welding for Porcelain Enameling" and "Welding High Purity Molybdenum" which appeared in the Dec. 16 issue.

L. R. CONSTANTINE
Welding Engineer
Elliott Co.
Jeannette, Pa.

PLASTIC PATTERNS

Sir:

In the Oct. 7 issue there was an article entitled "Precision Casting with Plastic Patterns." I would like to obtain two copies of the article.

M. PARKERTON
Weston Electrical Instrument Corp.
Newark

CENTRIFUGAL CASTING

Sir:

We are very much interested in the article "New Mold Coating Widens Centrifugal Casting Use" which appeared in the issue dated Dec. 2. Please send six additional copies.

ROBERT A. BREMNER
Asst. Chief Engineer
Electric Steel Foundry Co.
Portland, Ore.

FIREPROOFING MATERIAL

Sir:

In Newsfront of the Dec. 16 issue, mention is made of a recently patented fireproofing material for wood called Protexol. We are interested in learning more about this material, particularly with respect to its adaptability for use as blast furnace gas main plugs. We would appreciate your advising us to whom we should address inquiries.

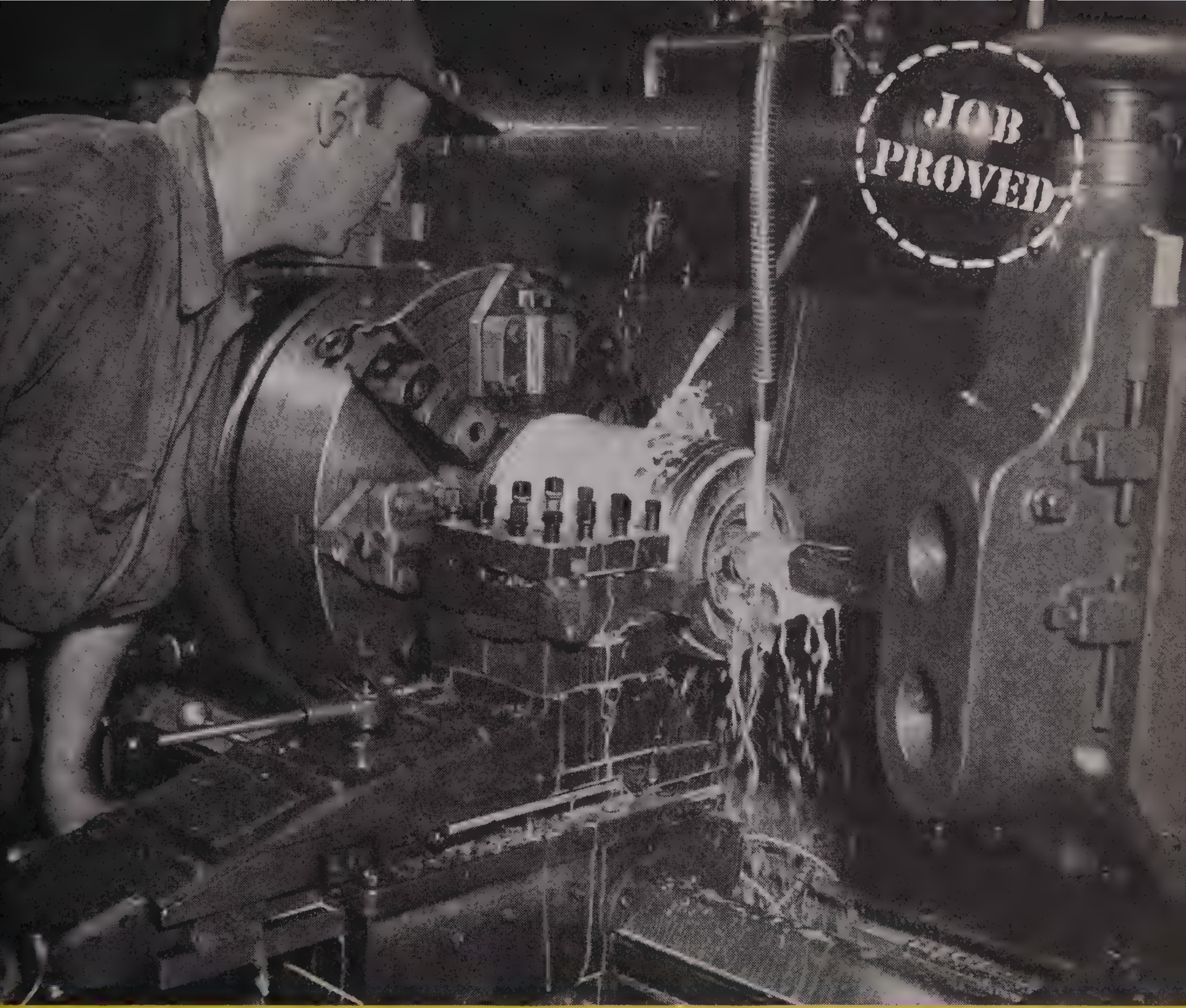
F. E. KLING
Chief Engineer
H. A. Brassert & Co.
New York

● F. A. Hartman, vice president, Protexol Corp., Kenilworth, N. J.—Ed.

HIGH SPEED PHOTOS

Sir:

Please send five copies of "High Speed Photos Reveal Extrusion Rate



MAKING THE BIG CHIPS FLY!

Sunoco Emulsifying Cutting Oil Is Used for Rough-Finishing of Heavy SAE 3140 Forgings

The correct cutting fluid is a big factor in the continuous heavy-duty machining of tough steel forgings on the machine shown above.

Machine: Warner & Swasey 4-A Heavy-Duty Turret Lathe

Material: SAE 3140 Forging

Operation: Roughing-Out Cap for Pile-Driving Machine

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Sunoco Emulsifying Cutting Oil meets the demand not only of tough cutting jobs, but also of a wide range of turning, milling and grinding operations calling for close tolerances and fine finishes. It is particularly efficient where precision machining at high cutting speeds is demanded.

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PLANT ENGINEERS RECOMMEND

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Below is shown a 14000 CPM Centri-Merge Arrester Unit on a cast iron dust exhaust system.

CYANIDE FURNACES fume exhaust system is connected to a Centri-Merge Washer.

To Fit Both Plant and Product

Dust and fume control equipment correctly designed and manufactured is of vital importance to the safety and health of plant personnel, and results in product improvement. Schmieg engineers pioneered this principle of dust and fume control.

Plant engineers call upon Schmieg to design and build dust and fume control equipment to fit both plant and product. Typical installations by Schmieg include dust and dirt arresters, fume exhaust air washers, kerosene and welding fume exhaust units, stock and dust handling equipment in textile plants, cyclone collectors for brake lining dust, polishing and buffing dust collectors... to name just a few.

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DISC SANDING BOOTH Proper ventilation keeps dust from escaping to other parts of plant.

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Engineers & Manufacturers

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Phenomenon" and "Significance of Proportional Limit and Yield Strength" from the Dec. 2 issue. These are wanted for the reference notebooks we maintain for our courses on metal properties.

W. LEIGHTON COLLINS
Associate Professor
University of Illinois,
College of Engineering
Urbana, Ill.

MEASURING PLATED COATINGS

Sir:

In the Dec. 2 issue there is a short article entitled "Composite Plated Coatings Measured Magnetically." Will you please send me more detailed information concerning this.

W. C. SMITH
Chief Inspector
Vendo Corp.
Kansas City

● The report "Magnetic Measurement of the Thickness of Composite Copper and Nickel Coatings on Steel," by Abner Brenner and Eugenia Kellogg of the National Bureau of Standards, who developed the method, will give you complete details. This report can be found in Journal of Research, National Bureau of Standards, 40, 295 (1948), RP 1875.—Ed.

PLATING ECONOMICS

Sir:

We would like to obtain two extra copies of an article which appeared in the Dec. 2 issue entitled "Can Your Plant Do Its Own Plating?"

GEORGIANA LARRABEE
Librarian
Sylvania Electric Products, Inc.
Emporium, Pa.

PRODUCTION CONTROL

Sir:

I would appreciate a tear sheet copy of the article "Production Control in an Electrical Equipment Plant" as published in the Nov. 25 issue.

RUNYON COLIE, JR.
Mgr., Wire & Cable Div.
Wind Turbine Co.
West Chester, Pa.

ELECTROTINNING FORMULAS

Sir:

Will you please send two copies of the article "Operational Formulas for Electrotinning Steel Strip" which appeared in the Dec. 2 issue.

P. MORRISON
Librarian
Canadian Industries, Ltd.
Montreal

COLD FORGING PRACTICE

Sir:

Kindly send to my attention four copies of the article "Modern Cold Forging Practice" from the Nov. 11 issue.

W. F. PRAVEL
District Mgr., Tool Steel Sales
Allegheny Ludlum Steel Corp.
Chicago

The
IRON AGE

Vol. 163, No. 5 February 3, 1949

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Your nearby Ryerson plant is a handy tubing center where large, diversified stocks await your call. Do you need mechanical or pressure tubing—seamless or welded; stainless tubing, pipe or pipe fittings? Practically any tubing requirement can be shipped on short notice. You save time because Ryerson has a wide range of sizes at plants from coast to coast. Probably there's a Ryerson tubing center near you.

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An Honest Dollar

IN spite of a definite turn in the price level and day by day confirmation that the postwar boom is running out, the President continues to demand power to control prices. The official diagnosis still holds that high prices are due to grain speculators, business monopolies, and corporate profits. Along the line consumer credit and bank loans become accessories.

It is against these alleged offenders that official zeal is directed. With declining grain prices, the steam has gone out of the program to check commodity speculation. Monopolies—i.e., business, not labor—still enjoy high priority on the Attorney General's schedule. Corporate profits are the special target of a revived excess profits tax. In spite of the complaints by producers of household durables that Regulation W is cutting into their business and precipitating unemployment, the Federal Reserve Board remains adamant on consumer credit. Nor has there been any unfreezing of the blocked bank assets which are supposed to function as reserves.

It is a curious fact that throughout this period the real cause of inflation and the only tested and proven roadblock against runaway prices have received virtually no attention. The failure is so general and persistent as to constitute a self-evident conspiracy of silence.

Back of the immediate causes of rising prices, such as successive rounds of wage increases and rigged commodity prices, is the vast increase in the quantity of money. Bank deposits subject to check have multiplied 5.9-fold since 1933 and folding money 5.4-fold. Another step back in the chain of causes is the increase in the public debt. Since the early days of "bold experimentation" this debt has risen 13-fold.

The statesman sincerely searching for a formula to check the expansion of the public debt does not have far to go. Of course he must first place some restraint on the characteristic American failure to live within our means, a failure most strikingly evident in the government itself.

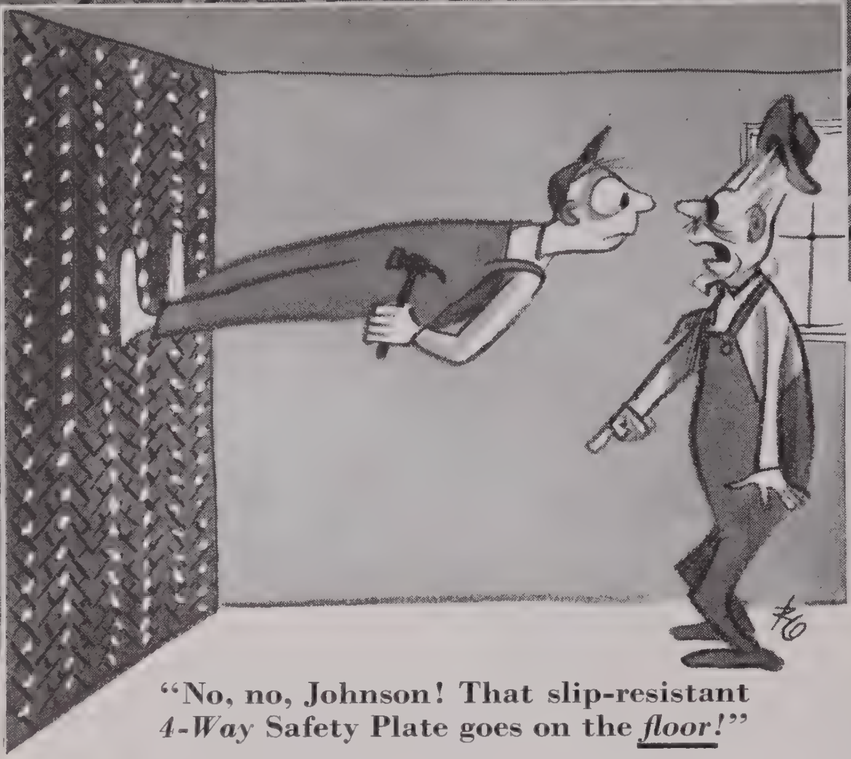
A great psychologist, William James, pointed out that a bad habit, to be broken, must be surrounded by circumstances which will enable the will of the victim to prevail against temptation. From time immemorial gold has been the specific circumstance that enabled governments to preserve their fiscal integrity and protect the virtue of the monetary unit.

The United States now holds approximately two-thirds of the world's gold supply. On June 30, 1948 our gold stock was equal to 12.3 per cent of our total money and bank deposits. In 1932 this ratio was 8.2 per cent; in 1929, 7.4 per cent; in 1920, 6.7 per cent; and in 1915, 9.2 per cent.

It may well be that gold at $35 an ounce is so far under-valued that the resumption of specie payments would cause an exhausting run on gold stocks. The fact that the dollar has lost 46 per cent of its purchasing power since 1934, and gold prices in other markets of the world range from $52 per ounce in Mexico to $105 in Shanghai, suggests that this danger is real.

It is for this reason that the proposal to allow newly-mined gold to find its own natural level in a free market has a great deal of merit. Here we could ascertain real value and determine the proper price at which gold convertibility of paper money could be resumed.

Joseph Stagg Lawrence



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IRON AGE NEWSFRONT

February 1, 1949

► A bazooka type charge in a container little bigger than a baking powder can promises to substantially improve the technique of opening tap holes in blast furnaces and openhearths during tapping. The device has already been used to tap more than 100 heats by one of the country's largest steel producers. Although it is still in the development stage its outstanding advantage is obvious—greater safety for workers.

► Reports now indicate that the compression ratio of the new Chrysler 8-cylinder models will be stepped up to 7.5 to 1, keeping pace with the new Oldsmobile and Cadillac. GM has one present advantage. Its tooling is setup for compression ratios up to 12 to 1, if necessary.

► Materials handling sources suggest that some of the money railroads are now spending for new box cars could be better spent on existing facilities to increase efficiency of box cars now in use. They claim that a saving of ½ day in turn-around time is equal to the acquisition of 50,000 new freight cars; that over 30 pct of the total turn-around time is used for loading and unloading cars and only 11 pct of turn-around time is used for road movement. Balance of time is used for movement through yards, interchange, storage, etc.

► RFC officials investigating steel allocations for the Lustron house, hazarded the suggestion to company officials that they put up their own steel plant to supply sheet and strip stock. While the suggestion fell on unfertile ground, the straw in the wind is that Government officials are taking President Truman seriously in his campaign to boost steelmaking capacity.

► It may be that savings have increased recently because the big sales job on semidurables and consumers jobs is not yet under way. When salesmen are again really selling their products and feeling the prick of competition, some of this "money in the bank" may become wherewithal for bigger and better sales records.

► Authoritative sources in Chicago declare that the Tucker Corp. is washed up. His "Angel" has pulled out. But the Windy City auto maker still feels that he can pull the iron out of the fire. These sources, however, insist that the only active interest left in the used wartime plant appears to be that expressed by real estate brokers. They feel that they can rent out the property and the business at a profit.

► A big question mark in the minds of some Detroiters is the possible effect of the stripped down Dodge and Plymouth roadster on sales of higher priced Dodge and Plymouth convertibles. Some auto engineers insist a roadster can hardly meet the public's price expectations for two reasons: (1) Volume will be low, initially at least, (2) a much sturdier and more expensive frame is required for a roadster than for any other model.

► Much emphasis is being placed on methods engineering (or process engineering) by the automotive industry. As opposed to the older time study, the aim here is to standardize the operation rather than merely establish time limits.

► There is a marked trend in the steel industry since the abandonment of the basing point system of pricing. This trend is 2-pronged: (1) The industry is encouraging steel consuming plants to move into areas which are long on steel production and short on steel consumption; (2) new expansion is reaching into areas long on steel consumption but short on steel production. Both moves are aimed at offsetting the effects of freight barriers. Economic advantages of the moves will not in the future be altered by the academic question of who pays the freight.

► Reliable sources indicate that government agencies clamoring for increased steel capacity on the basis of prevailing strong demand will change their tune if demand falls off before their goal is achieved. They will then stress need for increased capacity as a national defense measure. One way or another, they intend to fight the issue right up to the final bell.

► Some of the principals involved in the Follansbee stock transactions some time ago were reported to be attempting to gain controlling interest in the A. M. Byers Co., Pittsburgh, manufacturers of wrought iron pipe. One in particular insisted that he was able to form a group which would buy more than half of the company's shares of stock. He failed.

► Different steel companies are using different methods in attempting to ease the burden of replacement costs under current high construction and equipment costs. All, however, are agreed that some revision in computing depreciation for tax purposes is necessary for financial stability and to provide stockholders a fair return on their investments.

BOX car of N-A-X high-tensile steel. Such construction provides weight savings of approximately 2½ tons per car.

AUTOMOBILE
A C L

Steel Conservation in

THE increasing constriction on supplies of unallocated steel heightens the obligation of those fabricators and consumers who are favored by allocations to exercise good husbandry in their use of steel. Transportation officials have been urging an expansion in the freight car building program, presumably through an increase in allocations. But, in the meantime, the car builders have the alternative of expanding freight car output by nearly 1000 cars a month, without any increase in allocations or in steel consumption, merely by more widespread adoption of lightweight design.

Lightweight cars constituted only some 20 pct of all new freight cars going into service in 1948. These cars are as strong and durable as the more common heavy cars, and some of them, notably hopper cars, have greater carrying capacity per ton of tare weight. The car builders and railroads would be making a valuable contribution, in most instances of long run advantage to themselves, if they would expand the output of freight cars by more rapid adoption of lightweight design before seeking greater allocations of steel for this purpose.

The reason railroad officials are moving into lightweight design of freight cars somewhat slowly is that many of them regard it as merely a borderline or speculative form of economy. This judgment arises from the higher initial cost of lightweight cars and from a general disregard for sizable operating economies which the railroads will realize when they go the whole way into lightweight construction. In other words, the railroads recognize only those economies now proved in piecemeal adoption. Once the railroads accept the premise of an overall movement to lightweight freight cars, additional major operating economies will enter into their calculations and expedite the movement. In the meantime, the consumer of unallocated steel may well wish that the railroads would set the lightweight calendar ahead in the interests of conservation.

While aluminum and stainless steel are highly important in the general picture of steel conservation, the low-alloy, high-strength steels have been almost the exclusive material of lightweight construction of railway freight cars. These steels are commonly known by their familiar trade names of Corten, N-A-X, Hi-Steel, Otiscoloy, Yoloy and others. Although specific properties vary considerably between brands, the high-strength steels possess certain general characteristics in common. In the first place, the steels are considerably stronger than ordinary structural steel. For example, several brands are sold at a minimum yield point of 50,000 psi (½ in. hot-rolled plate) and a minimum tensile strength of 70,000 psi. At least one brand reports a Charpy impact value of 55.3 ft lb at 80°F and of 33.7 ft lb at −25°F. Some of the high-strength steels resist corrosion in the atmosphere and corrode at only one-half to one-third the rate of copper bearing carbon steel. The high-strength steels are further distinguished by better adherence of paint and other protective coatings and some by better abrasion resistance.

These qualities offer many fabricators an opportunity to get more production without con-

By MARVIN BARLOON
Chairman, Dept. of Economics,
Western Reserve University,
Cleveland

Lightweight Freight Cars

Construction of freight cars of low-alloy lightweight steels is urged by the author as a means of permitting an urgently needed increase in car output without increasing steel needs above present tonnages. Some 9900 additional cars per year could be added to present output, or conversely some 169,000 tons of steel could be conserved for other consumers' uses, by complete adoption of lightweight construction. Mr. Barloon examines the more common objections to this type of construction and finds that from the overall viewpoint a complete changeover to this construction appears inevitable; immediate transition would be of tremendous value today.

suming more steel. It is a matter of record that fabricators who have made this change have generally been able to reduce the tonnage of purchased steel by 20 to 25 pct.

There is reason to believe that close to 4 million ingot tons per year may eventually be saved by the high-strength steel movement in many fabricated product lines, including freight cars. Sales executives in the steel industry estimate that a maximum of about 25 million tons of finished carbon steel per year can eventually be replaced with high-strength steels with economy to the consumer. Should this total ever be realized, an average tonage conservation of 22.5 pct would yield an annual saving of finished steel of over 5.6 million tons. However, some allowance should be made for promotional enthusiasm behind the estimate. If it is deflated by 50 pct and the total potential replacement is considered to be in the neighborhood of 12.5 million tons, a conservation of 22.5 pct would amount to over 2.8 million tons of finished steel, or 3.9 million ingot tons, in any year of capacity consumption.

Conservation on this scale would be a major addition to industrial wealth. Saving 3.9 million ingot tons would represent close to 2 million tons of scrap and the pig iron output of 6 average blast furnaces every year. The iron ore saved would be more than 11 lake carriers could transport in a good season, and the annual saving of coal would fill more than 400 railroad trains of 100 cars each at 64 tons per car. Beyond all this there would be a reduction in car loadings of finished steel, a freight saving which would accrue directly to the steel buyer and would enter his dollar calculations just as the lighter weight of the fabricated product would enter the calculations of the ultimate consumer.

While low-alloy, high-strength steels also conserve steelmaking furnaces and rolling capacity, conservation of these facilities is reduced somewhat by slower processing and by greater shrinkage.* To illustrate: If a consumer were to switch from carbon steel to high-strength steel without any thickness or other tonnage reduction, his changeover would throw an additional burden upon openhearth and rolling capacity of 10 to 25 pct. But, in the more usual case in which the consumer is enabled by changeover to reduce tonnage consumed by 25 pct, it is probably safe to say that the conversion ordinarily represents a net saving of steelmaking and rolling capacity of some 5 to 10 pct. Nevertheless, the conservation of ore, coke, lake carriers, blast furnace capacity, scrap and freight cars is fully realized, ton for ton. It is in the light of the potential release of these critical industrial resources that the growth of low-alloy, high-strength steels takes on special meaning. All the burdens of conservation cannot be thrown upon the steel fabricator, however. The dollar economy of high-strength steels must remain the fabricator's primary concern. Fortunately, high-strength steels stand the dollar test well. There are three main considerations in deciding upon structural material: (1) The higher price of high-strength steels, (2) the reduced tonnage purchased and (3) the value of lightness in the fabricated product. One need not include the cost of fabricating processes as a separate consideration. While high-strength steels do require some alteration in forming and assembly practice, once these techniques are adopted processing costs are generally about the same as those for ordinary steels.

The mill price of a high-strength steel is typically about 50 pct higher than the price of carbon steel. But this differential, as a percentage, comes down when extras are taken into account because extras run about the same for both types of steel. Furthermore, high-strength steel often replaces other premium steels such as rust-retarding copper-bearing carbon steel, so that the premium which the fabricator pays for high-strength material is still further reduced. One steel executive has stated that in changing over to a high-strength steel a fabricator pays a price which is about 33 1/3 pct higher, but this is probably as low as the premium is ever likely to be.

For the price premium the fabricator gets a tonnage saving, the immediate conservation varying with the fabricator's design. In some instances, steel orders can be immediately cut by a maximum of 25 to 28 pct without affecting output or quality of product. At the opposite extreme, some fabricators take no tonnage saving at all, accepting as an alternative the greater strength and longer life imparted to the product by a high-strength steel of the same weight and bulk as the less durable steel it replaces. Such a fabricator gets no immediate economy, but looks forward to future savings in repair and rebuilding.

For example, a western railroad recently purchased hopper cars built of a high-strength steel of the same weight as the alternative copper-bearing carbon steel. The future savings to the railroad are twofold. The road will have smaller steel purchases in later years, both for rebuilding and for replacement. And in addition, some 10 to 15 years hence the railroad will save the labor and overhead costs which rebuilding and replacement would otherwise have involved. Had the railroad official chosen instead to take a high-strength steel of lighter section, he would have realized his tonnage saving immediately, but he would not have saved the labor and overhead of rebuilding and replacement in later years.

As between these two extremes, most fabricators and consumers follow an intermediate course. The usual tonnage saving falls between 20 and 25 pct, and often provides a stronger and more durable structure.

Immediate tonnage reduction saves the buyer much more than billing costs. It also saves freight, a consideration of great importance to buyers remote from steel-producing centers.

In addition to the economies of reduced steel consumption, the high-strength steels generally mean a lighter product, a feature of great value in mobile load-supporting structures. In much transportation equipment, especially when commercially operated, every ton removed from deadweight makes room for a ton of revenue load, thus increasing the income per vehicle without raising operating costs correspondingly. In some instances, because of trip schedules and other operating conditions, increased payload cannot be taken on. But, even when this is true, the reduced weight of the vehicle or structure, whether loaded or empty, cuts the cost of moving it.

It is for these reasons that the high-strength steels have been making their greatest progress in transportation equipment, particularly in highway trucks and trailers and in railway cars. If light-weight construction is eventually to save some 3.9 million ingot tons per year, the first major steps have been and will continue to be in the field of transportation.

Railway freight cars deserve special attention in 1949 because of the immediate problem of steel allocations for freight car building. The railroads need new cars badly, and to get them they want more steel. But the cars being ordered are mostly of heavyweight construction. If the railroads would convert to lightweight construction more rapidly than at present, new cars in much larger numbers without a corresponding increase in steel allocations would be forthcoming.

The steel shortage has been a persistent obstacle to the car production program. Carbuild-

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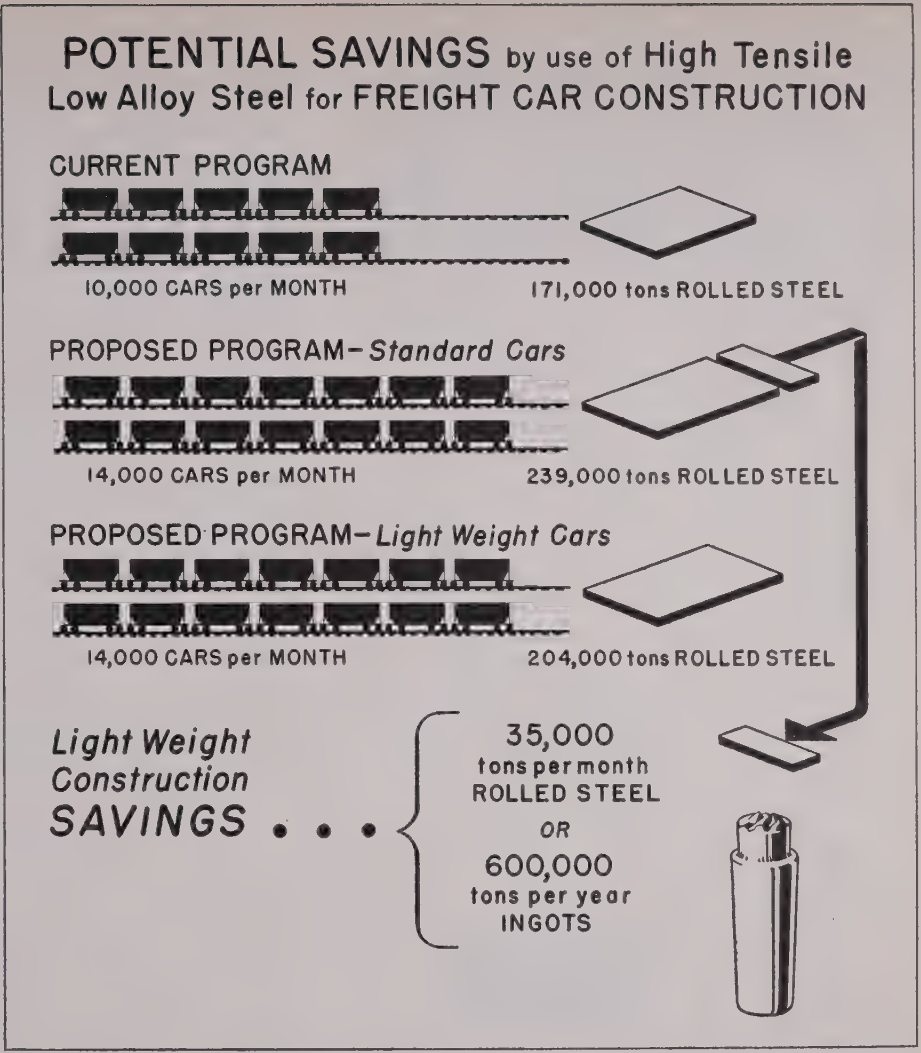
** The high-strength steels usually require a longer melting time than regular carbon steel by ½ hr or more because of lower carbon content. Hot topping requires more time on the pouring platform, and the narrow temperature working range is a retarding influence in the soaking pits and in rolling. The production of high-strength steels in reduced thicknesses, as compared to the carbon steels they replace, means a correspondingly greater schedule load on finishing rolls. These influences accumulate to an absorption of steelmaking and rolling capacity some 10 to 25 pct greater than that required for an equivalent tonnage of carbon steel, with an average probably in the general neighborhood of 15 pct. In addition, the shipping tonnage realization on high-strength steels falls below that of structural carbon steel by about 5 to 10 pct, largely because of cropping of hot tops. While this lower realization does not affect rolling capacity, it constitutes a further displacement of plant from the charging floor through slabbing.*



POTENTIAL SAVINGS by use of High Tensile Low Alloy Steel for FREIGHT CAR CONSTRUCTION

ing shops have the capacity to turn out some 14,000 cars a month; but, partially because of lack of steel, the shops are doing well to produce 10,000 a month. Allocations of rolled steel to produce these 10,000 cars for delivery during each of the winter months now run at 171,000 tons, a total of 513,000 tons for car deliveries during the first quarter of the present year.

The increased allocations now being urged would call for some 205,000 tons more per quarter for the car building industry. James H. Aydelott, vice president of the Association of American Railroads, recently spoke of "the immediate and imperative need" for steel for at least 12,000 new freight cars per month. Col. J. Monroe Johnson, director of the Office of Defense Transportation, urges a prompt increase to 14,000 new cars per month, and an eventual increase to 16,000. Without worrying too much about the eventual program, the possible increase of 205,000 tons per quarter is clearly indicated in a 14,000 car program—12,000 additional cars per quarter at an average of 17.1 tons of rolled steel per car. This would mean, for the year 1949, some 820,800 more tons of finished steel taken from other consumers for car building.

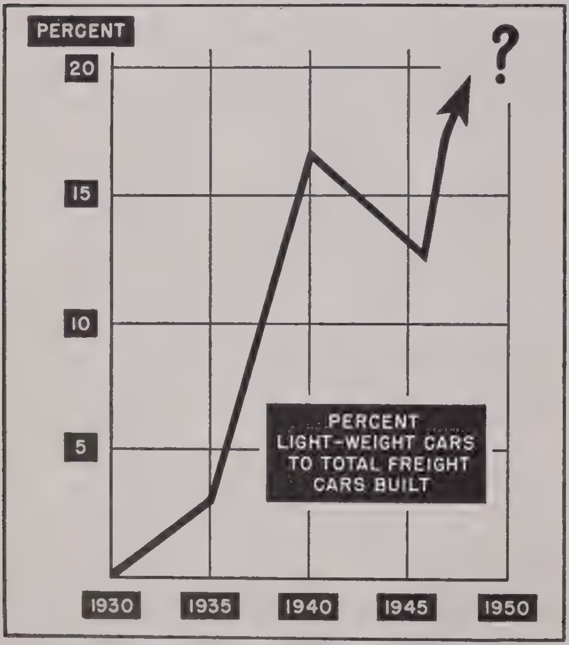
These arguments of the AAR and the ODT for more freight cars reflect a serious need on the part of the railroads which will continue for some years. The need for new cars arises not so much from the requirements of shippers during the current winter season as from prospective shortages during the next two to five years, especially in the event of war.

A disturbingly large proportion of cars in service are too old. Because these old cars will break down in increasing rates, only a large and continuing supply of new cars can avert a shipping crisis during the next few years. In almost all instances a 30-year-old car should be retired from service, and this assumption underlies much of the car-buying and operating practice of the railroads. But, at the present time out of a total of 1,784,000 freight cars in service throughout the country, over 365,000 or one out of five, are over 30 years old. These battered veterans of the First World War, running largely on their margins of safety, are fighting the transportation battle of 1949. At only 10,000 cars per month, it will take three years merely to replace them without adding anything to the railroad industry's freight car inventory. And many of these ancients will not last three years.

The breakdown rate has for some time cut into car supply. The car shortage this past fall developed from two circumstances. The first is that between V-J Day and July 1948, new freight cars put into service fell short of the number retired by 49,000. The second is that the number of cars set aside for repairs went up by 21,500 during this same period, so that the total reduction in cars at work since the end of World War II reached 70,500.

This second ingredient in the car shortage, cars out for repairs, is becoming increasingly serious. The number of freight cars on the bad order list has been going up steadily from a monthly average of 2.7 pct in 1943, to 3.7 pct in 1945, to 4.5 pct in 1947, and to approximately 4.8 pct in 1948, and will in all likelihood continue to advance. Therefore, even though the railroads acquire as many new cars as they scrap, the usable car inventory will continue going down. From statistics for the first 11 months of 1948, deliveries exceeded retirements by 12,136. But as of Dec. 1, there were 14,190 more cars awaiting repair than on Jan. 1. Hence, the apparent net loss in cars-at-work was 2054. Many of these retired cars will turn up on the branch lines and many will continue to see limited use, for carrying pulp wood and similar chores. Nonetheless, the statistics are disturbing.

It is clear that the railroads are rebuilding cars which ought to be retired. If 2054 more new cars during the first 11 months of 1948 could have been obtained, the same number of overage cars awaiting repair could have been scrapped, leaving the inventory of cars-at-work unimpaired. This would have meant an average monthly construction of only 9292 new cars, instead of the 9106 actually built. The fact that overage cars are deteriorating and the repair problem getting worse certainly counsels a program of at least a sufficient number of cars monthly to keep the inventory of usable cars intact.



INCREASE in the construction of lightweight freight cars shown as percent of total car production.

To get 12,000 cars or more, the railroads want more steel. But, more steel for car builders means less steel for other people. Freight cars cut with special severity into the supply of plates and sheets and, with one-third of plate production and probably one-sixth of sheet production already earmarked under various allocation programs, new allocations for freight cars would be particularly burdensome. While the typical steel consumer has doubtless felt the freight car shortage from time to time in the shipping department, the shortage of plates and sheets has pinched much more severely.

As a way out of this dilemma, lightweight freight cars could mean that the steel consumer might enjoy a better freight car supply and at the same time not suffer the steel supply cutback involved in an increased heavyweight car building program.

Steel allocations for freight cars are based on oldfashioned, heavyweight construction because most freight cars are still being built that way. While 12,173 lightweight cars were built in 1947, new heavyweight cars numbered 56,349. If for 1948 the railroads could have reversed this ratio, of the approximately 110,000 cars completed, about 90,000 would have been lightweight. At an average saving of 2.49 tons per lightweight car, this would have meant an easing on the supply of rolled steel of about 169,000 tons, enough to have increased the number of new cars by just about 9900 for the year. Thus, while lightweight design would not increase the new car supply all the way to 12,000 per month, it would do nearly half the job.

Indeed, lightweight construction would save a good deal more steel than that represented by additional new cars. The additional new cars would permit the retirement of more overage cars and thus cut down old car rebuilding. Car repairs and rebuilding consume lots of steel. Allocations for this purpose have been running at 77,000 and 84,000 tons per month, from 45 to 50 pct of allocations for new cars. If, through the more widespread adoption of lightweight construction new car output could be increased, fewer old cars would be rebuilt and the MRO allocations of rolled steel could be reduced by large tonnages.

In addition to these immediate steel economies, lightweight construction would provide a long-run saving. Many lightweight cars are built as much for increased durability as for lightness, and so represent a future saving in steel for repairs and rebuilding. Railroads have reported varying tonnage savings per car from lightweight construction, including the following: 50-ton hopper, 2.8, 2.85 and 3.2 tons saved; 70-ton hopper, 4.0 tons saved; box car, 2.4 and 3.2 tons saved. These figures indicate weight-saving possibilities. But, on the average the railroads save only 2.49 tons per car, and in taking this limited immediate economy they are adding durability and cutting down on repairs and rebuilding in future years, a form of steel conservation which will be realized beginning perhaps a decade hence.

While the railroads have made real progress in lightweight construction of freight cars, progress has not been adequate to achieve the degree of steel conservation easily within grasp. Although some lightweight cars were built as early as 1931, it was in 1935 that the car building industry really began the freight car changeover with a lightweight production that year of 3.1 pct of total output. Progress was steady until the war, reaching 16.6 pct in 1940. Following the war the advance in lightweight construction was resumed with 12.3 pct in 1946 and 17.3 pct of all new freight cars in 1947. Although complete figures are not yet available for 1948, the percentage of lightweight car production is up another notch, probably to around 20 pct. At this rate it will be another decade before a rapid movement towards a complete changeover is really under way. During this 10-year period, enough rolled steel will have been wasted on heavyweight construction to have lost a full year's supply of new freight cars. In 10 years the laggard steps of the railroad and carbuilding industry, in doing what it will in time probably do anyway, will have cost the nation enough rolled steel to have rehabilitated the transportation systems of Europe at 30,000 cars per year for five or six years under the Marshall Plan.

The reason progress is slow is that the railroads are only about half decided on the question of lightweight freight cars. Some have operated lightweight cars for 10 years or more, but in numbers so small that officials remain undecided as to lightweight car economy. Other railroads purchase lightweight cars in fairly large numbers, but intermittently with heavyweight cars, depending upon varying designs and quotations submitted by independent builders from time to time. Differences in operating requirements as between railroads account for much of this variation, but the general picture remains one of a half-sold industry.

There appear to be three main reasons for this indecision. The first reason is a persistent uncertainty of a few major railroads and car builders as to what modifications in car design are necessary to use high-strength steels successfully. Secondly, lightweight construction now costs some car builders more than necessary because of fabrication practice. Finally, a number of railroad officials confine thinking on lightweight construction to the short-run outlook and disregard major long-run economies.

The design problem leaves a few of the railroads doubtful as to the strength and rust-resistant qualities of high-strength steels. Lightweight freight cars have to be designed and built somewhat differently from heavyweight cars, and mere incorporation of light section, high-strength steel into heavy car design would lead to failure in service. The necessary design modifications were not well known when lightweight cars were first built so that a few of the lines which pioneered with high-strength steel between 1934 and 1937 inevitably adopted faulty designs. In consequence, these lines have begun to experience too high a rate of repairs and rebuilding since about 1945.

For example, one of the first car builders to adopt lightweight construction found that lightweight box car sides were subject to flutter and separation along the edges of the sheets. In construction this builder had substituted 0.05-in. high-strength sheets for 0.10-in. copper-bearing carbon sheets and had joined them by spotwelding. It is now commonly recognized that a 50 pct reduction in thickness is too much and that it takes buttwelding to insure against failure. But, this particular car builder, for the time being, has turned his major emphasis back to heavyweight cars more than half convinced that lightweight freight cars are a temporary fad.

A second type of resistance arises from the extra investment which lightweight construction represents. Considering box cars, for instance, a lightweight car typically costs from $100 to $250 more than a heavyweight car of the same capacity. Officials of a number of lines regard this premium as too high for the operating economies it will yield. Inasmuch as only 12 pct of box cars are loaded to capacity the railroads believe that weight reduction in most instances will not make possible any increase in revenue tonnage per car. Therefore, calculations of operating and rebuilding economy are based solely on weight reduction and durability of the car itself.

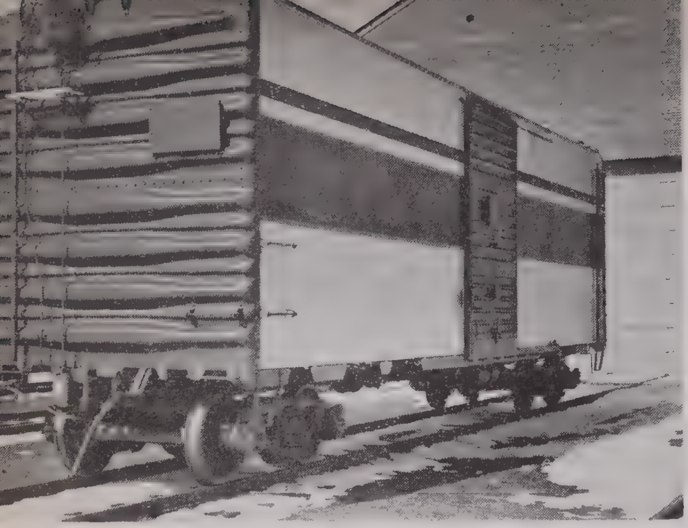
TYPICAL lightweight hopper car, fabricated from Otiscoloy, in use on the Aliquippa & Southern Railroad.

Proceeding on this assumption, G. U. Moran, Research Investigator for the AAR, working with a committee of 11 railroad executives, made a thorough and systematic study of lightweight freight car economies based on 1941 operating costs. Of the 29 major railroad lines covered by this study it was evident that as of 1941 only about 17 could have afforded a premium of $200 for an average weight saving of 2.3 tons per box car and that only 8 of the 29 could have paid as much as $250. Steel executives point out that the savings of weight reduction in 1949 are much higher than in 1941 because of higher operating costs and that today probably 22 of the 29 lines could pay $200 and 20 could pay $250. But, even taking this more favorable view, it seems clear that about one-third of these lines find some support in the AAR study for an adverse judgment of lightweight box cars.

With regard to hopper cars the economy is considerably greater because these cars are almost always loaded to capacity so that every ton removed from car weight makes room for an additional ton of revenue load. But, counteracting this advantage, lightweight construction of hopper cars requires a higher initial outlay premium than lightweight construction of box cars. In addition to the higher cost of steel and fabrication, lightweight hopper cars require special brakes to accommodate the widely varying gross load at the rail and these brakes cost between $250 and $350 per car. For this reason the total investment premium for such cars runs from $250 to $450. Therefore, even with full allowance for the additional lading per car, lightweight hopper cars present an investment-economy ratio similar to that of box cars.

LIGHTWEIGHT box car made from N-A-X high-tensile steel. Such cars offer fabricators the opportunity to reduce purchased steel tonnage by 20 to 25 pct.

THE
MILWAUKEE
ROAD
MILW
14237



FREIGHT car made from Otiscoloy and Corten, shown after completion at American Car & Foundry Co., Berwick, Pa.

According to the AAR study, as of 1941, 25 of the 29 lines could have afforded a premium of $250 per lightweight hopper car, but only 4 could have afforded $450. Even allowing for the greater savings of lightweight construction in 1949, the premium cost of lightweight cars remains a real deterrent to faster progress.

This premium is probably higher than it needs to be. In a typical lightweight car, apart from the cost of special brakes, the extra outlay will fall between $100 and $250, but of this amount only about $75 is accountable to the price of high-strength steel. With respect to this $75 there is no clear indication of wasteful production or distribution practices on the part of the steel companies, the elimination of which might reduce the premium on high-strength steel. However, with respect to fabrication costs of lightweight cars there is real reason to suspect considerable waste.

In the first place, lightweight freight cars are generally ordered in quantities which are too small. Each order represents an individual design and the economies of large-scale production are rarely realized. Whereas orders of 1000 to 5000 heavyweight cars of substantially uniform design are common, lightweight cars are more usually ordered in lots of 300 to 2000 and sometimes as few as 50 are ordered at a time. Perhaps the most common order lies in the magnitude of 300 to 500. Small orders alone will explain much of the premium expense of lightweight design.

Engineers who have had the greatest success with lightweight construction are generally agreed that large and expensive jigs and other setups are necessary for economical building. This necessity largely stems from the use of buttwelding, a form of assembly highly preferable to spotwelding or riveting for lightweight construction. Economical buttwelding requires a close fit of side and floor sheets, and this is attained by flame-cutting sheets to size and by the use of jigs sufficiently large and complicated to lock the sections of an entire freight car squarely in place for welding. To add to the investment, rotator jigs are highly desirable to permit downwelding in all positions. In one instance a large car builder invested in the neighborhood of $1 million in setups and jigs for a single large all-welded freight car order. It is significant that this builder was able to quote a surprisingly low price on an order exceeding 5000 cars of uniform design.

TABLE I

Comparison of Investment Required for Standard Lightweight and Heavyweight 50-Ton Hopper Cars to Handle a Given Load Capacity

Type Car	Total Load Capacity	Load Capacity per Car	No. of Cars Required	Price per Car	Total Investment	Additional Investment
Heavyweight	64,000 tons	64 tons	1000	$3800	$3,800,000	base
Lightweight	64,000	66.5	963	$4100	3,948,300	$148,300

Another car construction engineer who has had notable success with lightweight construction has estimated that riveting is cheaper than buttwelding in all quantities of less than 5000 cars, but that in quantities greater than this, buttwelding is cheaper. Taking the typical present experience of a $250 premium per lightweight car and according $75 of this to the higher cost of high-strength steel, it seems clear that a sizable portion of the remaining $175 represents wasteful fabrication practice on small orders. This makes the premium investment in lightweight cars unnecessarily high.

But, the premium investment does not tell the whole story of resistance to lightweight construction. The AAR study accepts this investment, insofar as lot sizes and fabrication practices are concerned, and indicates that for nearly 75 pct of the railroads, all new freight cars could profitably be of lightweight design. Yet, only 20 pct of the new cars are so built.

The reason for this discrepancy is that, whereas the AAR study takes into account the ultimate, long-run economies of a virtually full changeover, the officials of individual railroads generally confine their attention to the immediate outlook in their car-buying decisions. A car-buying official looks only at the one order before him. If his line owns 40,000 cars and he is currently placing an order for 1000, he considers lightweight design only for the 1000. Therefore, he disregards the possibility of a reduction in the total number of home cars in which his company needs to invest.

However, if the railroads were to make a virtually complete changeover to lightweight freight cars, fewer cars to accommodate a given volume of traffic would be required. This is especially true of lightweight hopper cars in which the greater load-carrying capacity is almost always fully utilized. Table I illustrates this advantage.

Railroad officials do not ordinarily compute the investment in the manner illustrated in the table, however, because they do not convert the greater capacity per car into a smaller number of cars. When a railroad mechanical officer gets an authorization to arrange the purchase of 1000 hopper cars, he commonly compares 1000 heavyweight cars with 1000, rather than 963, lightweight cars, and so, in the above illustration, would consider the extra investment to be, not $148,300, but $300,000.

Again, the possibility of complete lightweight freight trains was clearly recognized in the AAR study. However, this prospect almost never enters the workaday thinking of railroad officials responsible for car design. They take the more immediate view. Right now, only about 5 cars in every 100 are of lightweight construction. Because of freight car interchange, most of the cars serving any one line belong to other railroads, and the mechanical officer for a given railroad assumes, realistically enough, that other lines will continue buying heavyweight cars and that his locomotives will have to pull them. Furthermore, in view of a typical car life of over 30 years, most of the heavy cars now in service will still be with us for some 15 years. Therefore, the railroad official assumes that even if lightweight cars are ordered, the particular railroad will not get lightweight trains. For this reason the buyer leans toward more heavyweight cars.

But, eventually complete lightweight freight trains, just as we now have lightweight passenger trains, are probable—and the lightweight freight trains will provide substantial locomotive economies. For example, if most hopper cars in the country were of lightweight construction, full loading would mean that in a given coal train less of the load drawn by the locomotive would be car weight and more of the load would be coal, so that to handle any given volume of coal traffic in a year the railroad would have to operate fewer trains. This would reduce the number of locomotives required as well as the investment in facilities to service and maintain the cars, an appreciable economy. Again, lightweight box cars, even without compensating loading, would mean lighter trains and, therefore, faster schedules or lighter locomotives. But, because the railroads do not figure on these economies which would follow only from a virtually complete changeover, the decision against lightweight cars is often made. And, because lightweight cars are so often decided against, the day of the complete changeover is postponed. It therefore appears to be common sense not to figure on it. It should be emphasized that this is not meant as a criticism of business judgment but rather of the interchange arrangements within which that judgment is confined.

The interchange arrangements raise still another obstacle. Some officials point out that a freight car owned by a particular railroad typically passes from 50 to 80 pct of its service life on other lines. For example, on a recent date one railroad found that 62 pct of its cars were in off-line service. Therefore, a railroad car buyer is purchasing new cars for his competitors to operate. Considering that lightweight freight cars cost anywhere from $100 to $450 more than heavy cars do, when a railroad official buys the more expensive lightweight car for operating economy, his line pays all the extra investment, but his competitors get most of the economy. Indeed, some railroad officials assert that foreign lines take advantage of the running economies of the lightweight cars that happen their way by detaining and using them beyond the necessary period. Certainly under the Car Service and Per Diem Agreement, as now in effect, the railroads are free to do this without penalty and have a clear operating incentive to do so. There is no way to tell how serious a deterrent to lightweight construction this line of thinking may be, but if each railroad were to assume that all other lines were to remain backward, progressiveness would certainly be penalized.

In the meantime the steel shortage persists, and the pressure continues to increase allocations for freight car building. The typical steel consumer needs more freight cars in which to ship his product, but he cannot get these cars without giving up steel with which he makes his product. The movement to lightweight construction is proceeding slowly but surely. The community of car building engineers includes many foresighted and progressive men, and the fabricator in other markets who is dependent upon unallocated plates and sheets may well cry out to them: "Speed! Speed!"

Author's Acknowledgement

Materials for this article were drawn in part from direct inquiry and in part from published sources. The following trade associations and publications deserve particular credit as sources of basic data: American Railway Car Institute, Assn. of American Railroads, THE IRON AGE, *Railway Age, Materials & Methods and Chicago Journal of Commerce.*

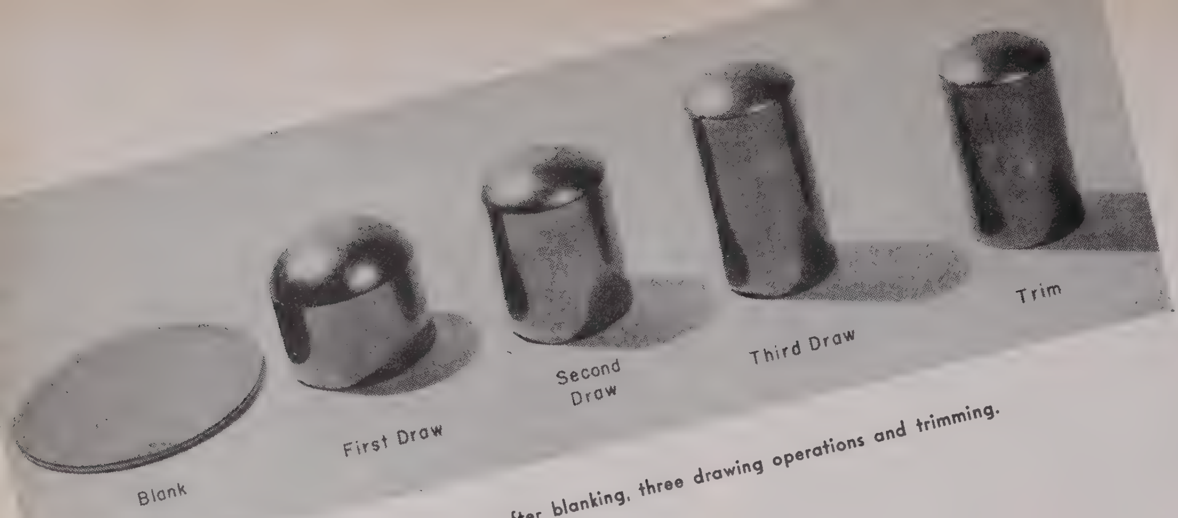


FIG. 1—A tappet cup is shown after blanking, three drawing operations and trimming.

100 Valve Tappets

WHILE involving simple production problems, an unusual layout of diversified machines connected by conveyers is geared to turn out 46,000 hollow valve tappets in 8 hr, or nearly 100 a min. Production at such a high rate on parts held to fractional thousandth tolerances requires a well conceived and expertly integrated manufacturing procedure. Such a line is in operation at the River Rouge plant of Ford Motor Co., making tappets for Ford and Mercury automobiles. The complement of operations includes drawing, piercing, welding, and several grinding and honing operations on the external surface of the part.

Finished tappets, referred to by Ford as *valve push rod bodies,* measure 0.9992 to 0.9996 in. diam and 1.720 to 1.725 in. long. They are file hard, ground to a flat on the top, ground and honed on the external cylindrical surface, and ground on the bottom. Inspection of the tappets is exacting and the parts are segregated for selective assembly in engines.

The stock used in making the main body of the part is low-carbon cold rolled steel, 0.071 to 0.076 in. thick. Disks are stamped from this stock, and the successive stages of blanking, drawing, and trimming are shown in fig. 1. Three draws are required to form the tappet cup, after which the part is restruck. Following drawing, the parts are trimmed and pierced.

The tappets are drawn in a 200-ton Cleveland press, shown in fig. 2, in a novel progressive die arrangement shown in fig. 3. Each drawing operation pushes the cup through the die into an indexing dial that advances it to the next draw position. The four die arrangement includes a fixed position and a set of three indexing dials to shift the work into the successive cupping and the restrike positions. The die, dial, punch and ejector arrangements are shown in fig. 3.

As the press ram descends it simultaneously draws three cups and restrikes one. As the press ram is withdrawn, the dials automatically index, counter-clockwise, one position, placing a new part under the punch. The draw dies have tungsten carbide inserts.

Blanks of 2.300 in. diam, produced in a separate press setup, are fed to the first draw station from a hopper and magazine by a spring rod. The blanks are then loaded into a rack beside the first drawing station and are advanced automatically into position under the first punch. Cups that measure 1.0095 in. diam and about 1¾ in. long are stripped from the restrike punch and fall through a chute at a rate of about 35 a min. It thus requires three identical press setups to provide cups at the required rate. While the press cycle is automatic in every respect, each press has an operator.

The blanks are coated with P-10 Pillsbury draw compound, which eliminates the copper plating previously considered necessary. As the drawn cups are ejected from the press, they fall into barrels from which they are transferred to an I.M.F. rotary washer for removal of the draw compound in a mild soda solution. A conveyer

◦ ◦ ◦

By VINCENT TROLLEY
General Foreman,
Valve Push Rod Production Dept.,
Rouge Plant,
Ford Motor Co.

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A Minute

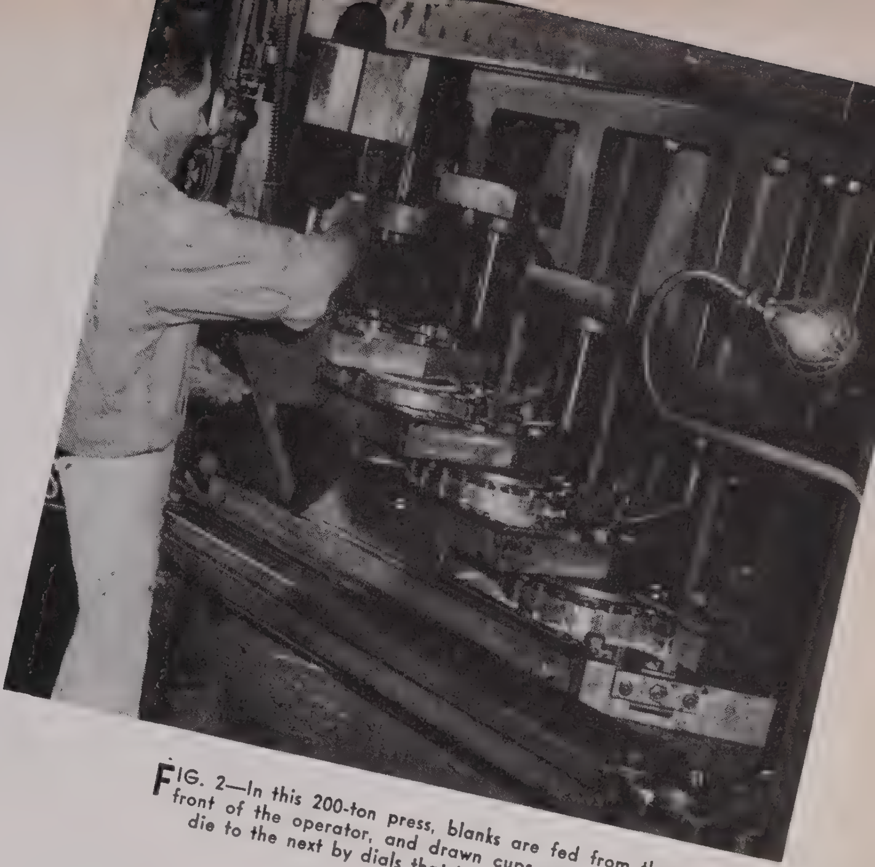


FIG. 2—In this 200-ton press, blanks are fed from the hopper in front of the operator, and drawn cups are advanced from one die to the next by dials that index after each press stroke.

An efficient layout of diversified machines, interconnected by conveyers, is geared to produce 46,000 hollow tappets in 8 hr, or nearly 100 a min, at the Ford River Rouge Plant. The integration of drawing, welding, heat treating and grinding operations and the material handling methods used in this setup are described by the author. A feature of the line is a progressive die arrangement in a 200-ton mechanical press.

transfer from the press to the washing machine is now being installed.

Washing leaves the cups ready for trimming to length. This is done two cups at a time using a No. 57 Toledo press, as shown in fig. 4. Feed is from a rotating drum hopper that is to be kept supplied with parts through chutes coming from the washing machine. The chute conveyer mechanism is not shown in fig. 4, as it was not installed at the time the photograph was taken. From the drum, the cups fall into a stock chute that carries them by a positive feed mechanism to the trim dies. This transfer chute was made by Detroit Power Screwdriver Co. Cups feed along a track from the rotating drum hopper to the press. During this transfer they are in a horizontal position with the open end to the rear. On the press is a loading device that brings two cups at a time into position for automatic clamping by the ram of an air cylinder just before the press closes.

The trimming dies in the press have a four-way motion, with the shearing elements moving inward rather than across the open end of the cup. Scrap sheared off falls through the press bed into a tote box and the parts eject automatically. In trimming the cups, length is held between 1.683 and 1.688 in. The press runs automatically, but requires the attention of an operator. Three trimming presses keep pace with the three draw presses that supply the cups. A special conveyer has been designed, but not yet built, to transfer the trimmed cups to the next operation.

The tappet design calls for two 5/32 in. holes 90° apart through the skirt of the cup, one being near the head and the other near the open end. To pierce these holes, the cups are fed automatically in pairs over horizontal horns having button die inserts. When the cups are loaded on the horns, the punch ram descends piercing two holes, one in each part. At the same time, two cam operated punches moving horizontally pierce the two side holes, one in each piece.

On the upstroke, the punches withdraw, the two pierced cups eject automatically, the slugs fall out of the button dies, and another pair of cups is fed into position. Three presses operating automatically, keep pace with the trim and draw presses. Piercing completes the operations in the stamping category and leaves each cup ready for application of the bottom or foot that closes the open end.

Bottoms are blanked from 0.140 to 0.145 in. thick coiled strip in a No. 675 Bliss press. In the blanking operation, an annular recess is simultaneously coined into one side of the part near its periphery. The blanks are then put through a Gardner grinder that grinds both faces at the same time. To insure a recess of 0.023 to 0.025 in. deep in one face of the blanks, they are run through a restrike die, from where they go to a Cincinnati centerless grinder where the edge of each blank is rough ground to bring the part to a diameter of 1.020 to 1.022 in. Finished and unfinished blanks are shown in fig. 5. Grinding completes the operations on the bottom blanks, following which they are ready for welding to the drawn cups.

Until recently welding has been done in what are called Ford flat top welders, one of which is shown in fig. 6. In loading this machine, the operator picks up a cup in one hand and a bottom in the other and loads them horizontally into a fixture on a slide. The slide moves the parts to welding position between two welding heads, one fixed and the other movable. When the movable head is advanced, the butt weld is made automatically. Welding involves an average upset of 0.070 to 0.080 in., and the length after welding is from 1.740 to 1.750 in. When the weld is completed, the work is released, the slide withdraws, and the part drops out, leaving the fixture ready for reloading. Each machine makes 28 to 30 welds a min. Equipment for automatically loading these welding machines is under construction.

Welding the bottoms to the cups is also done on an automatic resistance welder equipped with an indexing table carrying 12 fixtures and arranged to move counter-clockwise. Motion of the table is intermittent, moving 30° after each weld. At present, one operator loads the cup and another the foot or bottom as each fixture passes his station, but automatic loading equipment is being designed. When a fixture arrives at the welding station and comes to rest, electrodes advance vertically to make the weld. The fixture then advances to another station where the part is air ejected, leaving the fixture station ready for reloading. Welds are made at the rate of 34 a min, but this speed is expected to be increased with automatic loading. Fig. 7 shows the cup and the welded assembly.

After welding, the tappets are transferred to a hopper by an automatic Danley feed that shifts the parts into a No. 2 Cincinnati centerless grinder, through which the parts are advanced as the welding flash and excess stock of the bottom is ground off. This machine has an 8-in. hard wheel. Ground parts are elevated automatically to another hopper and then carried in the same manner through two duplicate grinders. These are equipped with softer wheels that re-

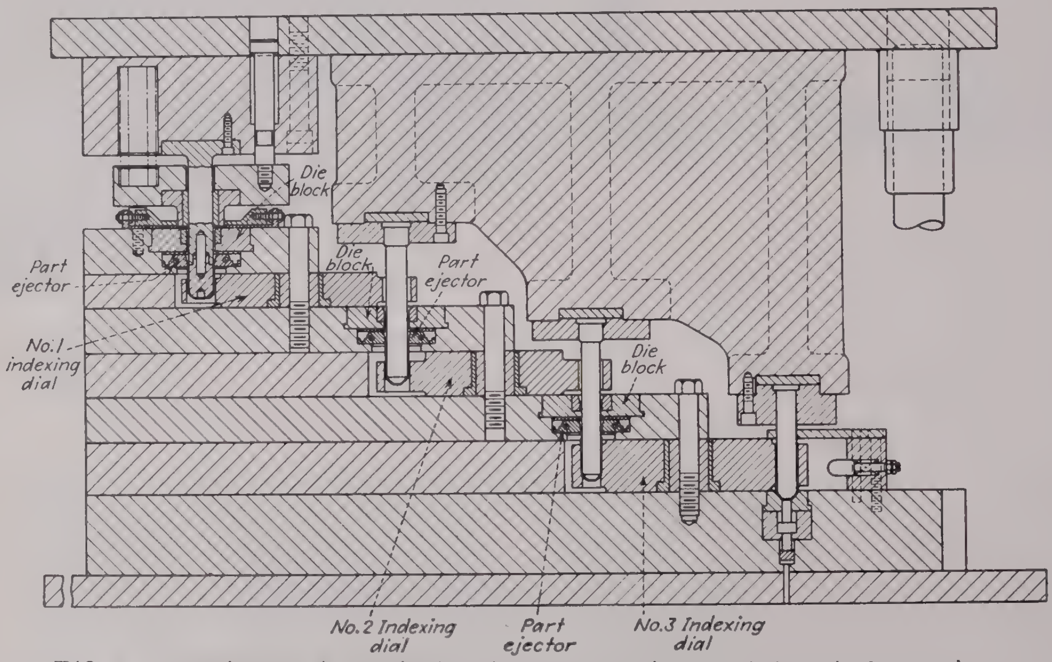
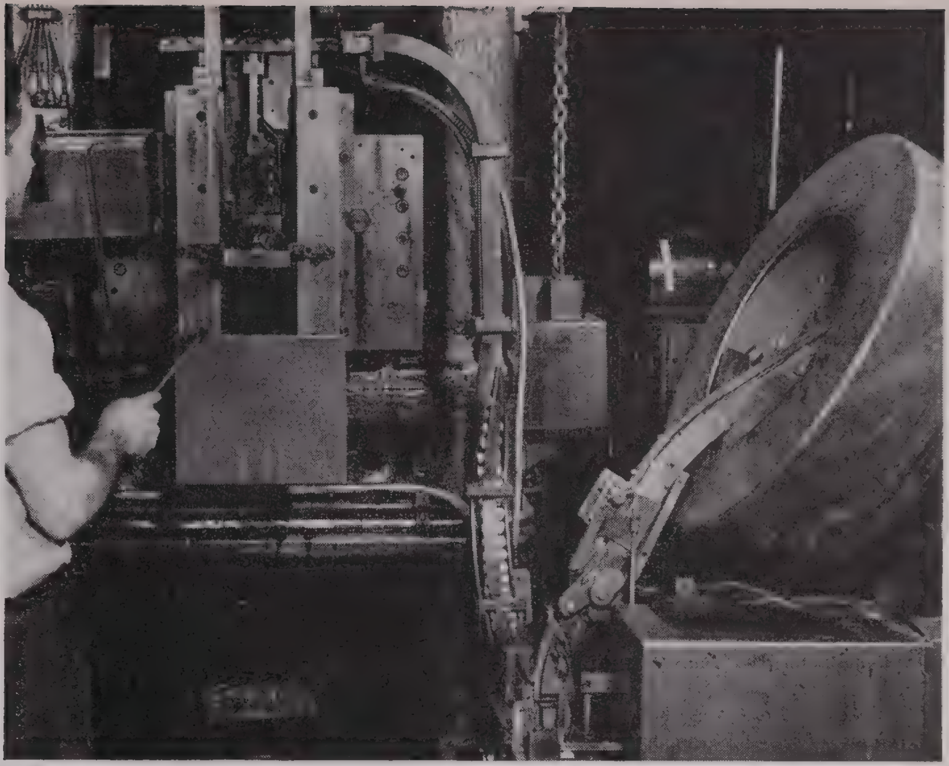


FIG. 3—A vertical section through the draw die arrangement (see fig. 2) shows the four punches, the draw dies and their supports, and the three indexing dials that shift the cups from station to station.

FIG. 4 — In trimming the tappet cup ends, the parts are fed from the rotating drum along the track into the die. A four-way motion of the shearing elements trims the skirts of the cup to size.

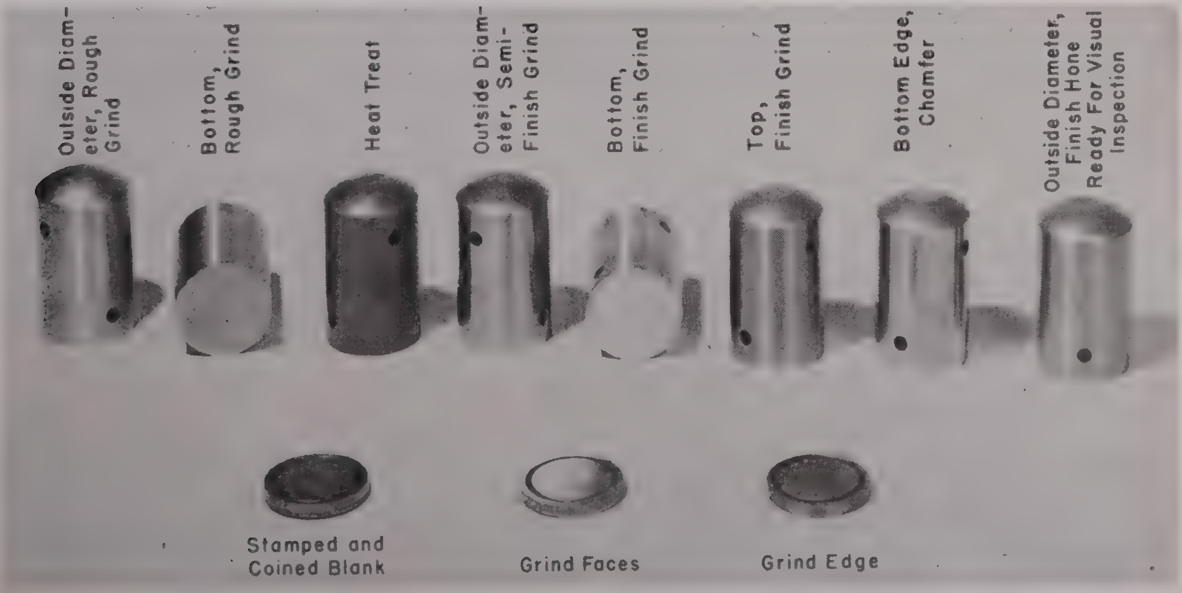


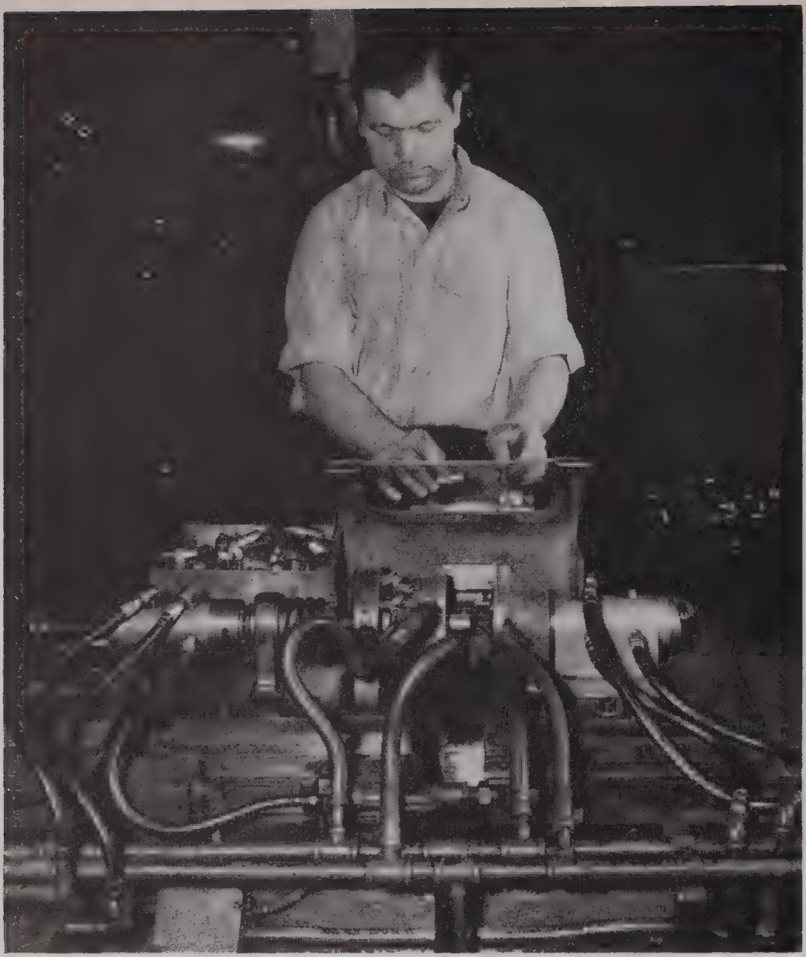
move about 0.001 in. from the OD in each pass. All centerless grinding equipment in the plant has similar handling equipment.

Before heat treating, the tappets are ground to a length of 1.734 to 1.737 in. on a three-wheel Hanchett grinder shown in fig. 8. This machine is equipped with a work-holding ring having 150 stations. The ring turns slowly in a horizontal plane, advancing the work past the 60-grit wheels. The pins that position the parts in the fixture are movable, and eject the parts as they progress up an inclined slide at the unloading station. This unloading technique is shown to the left in fig. 8. While this machine now requires two men for loading, plans have been completed for an automatic feed mechanism.

As the tappets come from the Hanchett grinder, they are loaded 200 to a basket for feeding through a Surface Combustion furnace shown in the background in fig. 8. They are carburized on all surfaces to a depth of 0.015 to 0.017 in. during the 1¾ hr transit through the furnace. Parts are quenched in oil as they issue from the furnace and then are transferred to Lindberg furnaces for a 30 min temper. This heat treatment makes the tappets file hard. Controlled

FIG. 5—The appearance of the tappets after various grinding operations are shown here. The bottom or foot of the tappet after blanking and coining, grinding both sides, and grinding the edge, is also shown.


Outside Diameter, Rough Grind
Bottom, Rough Grind
Heat Treat
Outside Diameter, Semi-Finish Grind
Bottom, Finish Grind
Top, Finish Grind
Bottom Edge, Chamfer
Outside Diameter, Finish Hone Ready For Visual Inspection
Stamped and Coined Blank
Grind Faces
Grind Edge



LEFT

FIG. 6—In this machine, the foot of the tappet is welded to the cup. The fixture is loaded by hand and then shifted to welding position.

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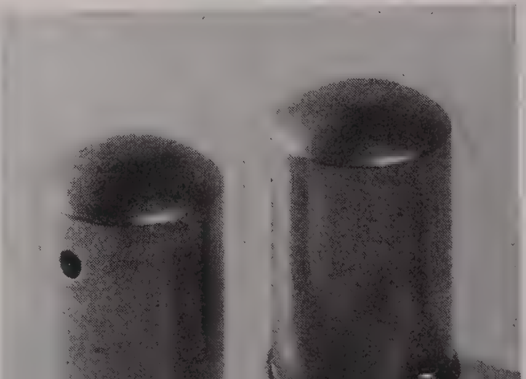
BELOW

FIG. 7—Cups are shown here as they appear before and after welding of the foot to the cup, and before any grinding is done.



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atmospheres in the tempering furnaces avoid scaling, but further grinding is required to produce the close dimensions and fine finish required.

The cylindrical surface of the tappets are semi-finished by passing the parts through three additional Cincinnati centerless grinders that, though removing very little metal, reduce the diameter to 1.0000 to 1.0002 in. The bottom is ground to a 3½ to 8 microinch finish in a three wheel Hanchett grinder equipped with a feed ring similar to that shown in fig. 8. Two 120 grit and one 180 grit wheels, arranged for self-feed, are used, and the length is held between 1.729 and 1.731 in.

Another Hanchett grinder grinds a flat 0.340 in. diam on the domed top of the tappet. This grind must be made so that the face produced is not more than 0.0005 in. out of square with the sides and the bottom face must be within 0.001 in. of square with the sides. In inspection, the tappet is rotated on the cylindrical surface to check the squareness of the top and bottom surfaces.

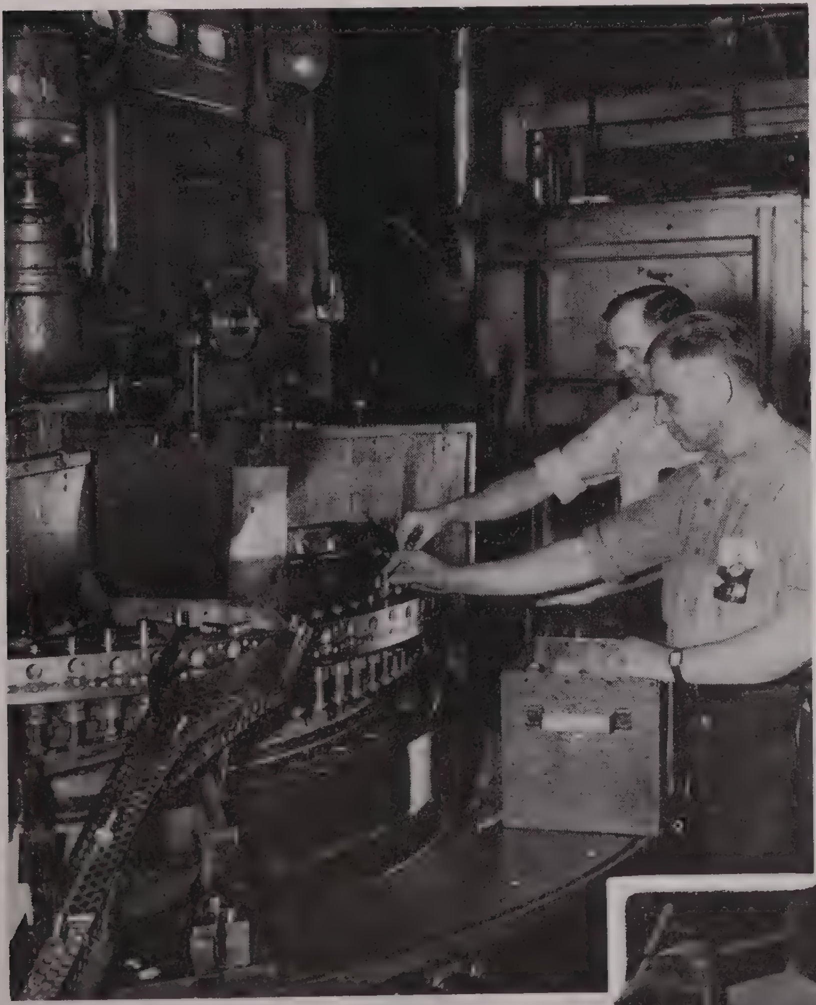
The bottom edge of the tappet must be chamfered. This is done in the arrangement shown in fig. 9. The equipment used is a Snyder horizontal surface grinder. Tappets are fed automatically from a magazine into the inclined recesses on the periphery of the chuck. The chuck turns slowly and contact with the grinding wheel causes the tappets to rotate about their own axes as an 0.004 to 0.008 in. wide flat is ground to produce the required chamfer. After the chuck rotates about three-fourths of a turn, the parts eject into a chute by an air blast. Tappets as they appear after several of the foregoing operations are shown in fig. 5.

Since the cylindrical surface of the tappet is the guiding surface against which the tappet reciprocates in the bore in which it fits, the requirements for finish on this surface are rigid. Consequently, the tappets are fed through another Cincinati No. 2 centerless for final grinding to 0.9992 to 0.9996 in. diam. Since the surface still does not have the high finish, free of grinding marks, that is required, each part is given a final honing in a No. 3 Cincinnati centerless machine. This operation merely removes final grinding scratches and gives a mirror finish that is extremely smooth. The tappet is then ready for visual inspection.

For visual inspection, the parts feed along a steel belt, and, as they advance at a rate of about 100 a min, the time per piece for inspection is short. Nevertheless, inspectors quickly check for missing holes, rough or burnt finished surfaces, imperfect welds and blemishes on the flat faces. Some rejects can be reprocessed to eliminate defects, while others are scrapped.

Visual inspection is followed by final gaging. This is done automatically in a machine that checks the squareness of the ends, diameter and length. In addition, the machine segregates the tappets into five lengths, ranging from 1.720 to 1.725 in., for selective assembly. About 75 pct of the finished tappets come within the mean length of 1.722 and 1.723 in. Oversized rejects are reprocessed, but those below the minimum limits are scrapped.

The procedures described apply specifically to tappets for Ford engines, but on one day in four the same machines produce tappets for the Mercury engines. As the differences in the tappets for these two engines are slight, Mercury tappets are given a yellow distinguishing mark. Tappets that pass final inspection are packed 100 to a box for transfer to assembly departments, and boxes are marked as to length classifications of the contents.



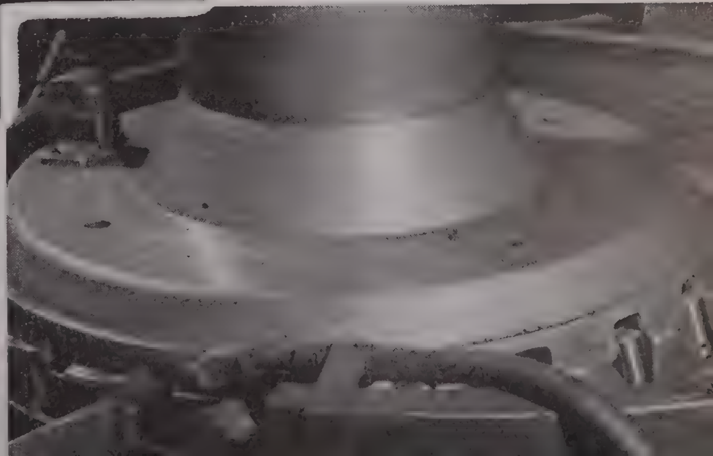
LEFT

FIG. 8—As the tappets are advanced by the fixture, the bottom faces are rough ground in this machine. The carburizing furnace is shown in the background.

o o o

BELOW

FIG. 9—The lower edge of the tappets are chamfered in this grinding machine as the fixture rotates slowly. The tappets rotate on their own inclined axes, driven by the grinding wheel.



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Core Baking 2 minutes v. 4 hours

EXCELLENT results are being secured by the Crompton & Knowles Loom Works, Worcester, Mass., in the use of high-frequency electronic core baking equipment as an adjunct to the recently modernized gray iron foundry[1] operated by this company for the production of loom castings. Although the new equipment has not displaced the older core baking ovens, it supplements these and yields a long list of advantages deserving of note, particularly in connection with high-production operations.

Among the advantages of the equipment are: Exceedingly rapid baking; uniform and complete baking with overbaking precluded; a lower baking temperature; precise heat control, automatic operation; small space requirements; considerable time saving; adaptability to a production line setup; decreased smoke and fumes; elimination of warmup time; relatively cool surroundings, and low cost per unit output.

These benefits have been fully substantiated by the company during several months of operation and after careful comparison with conventional equipment. Moreover, the cores produced (see fig. 1) are definitely superior to conven-

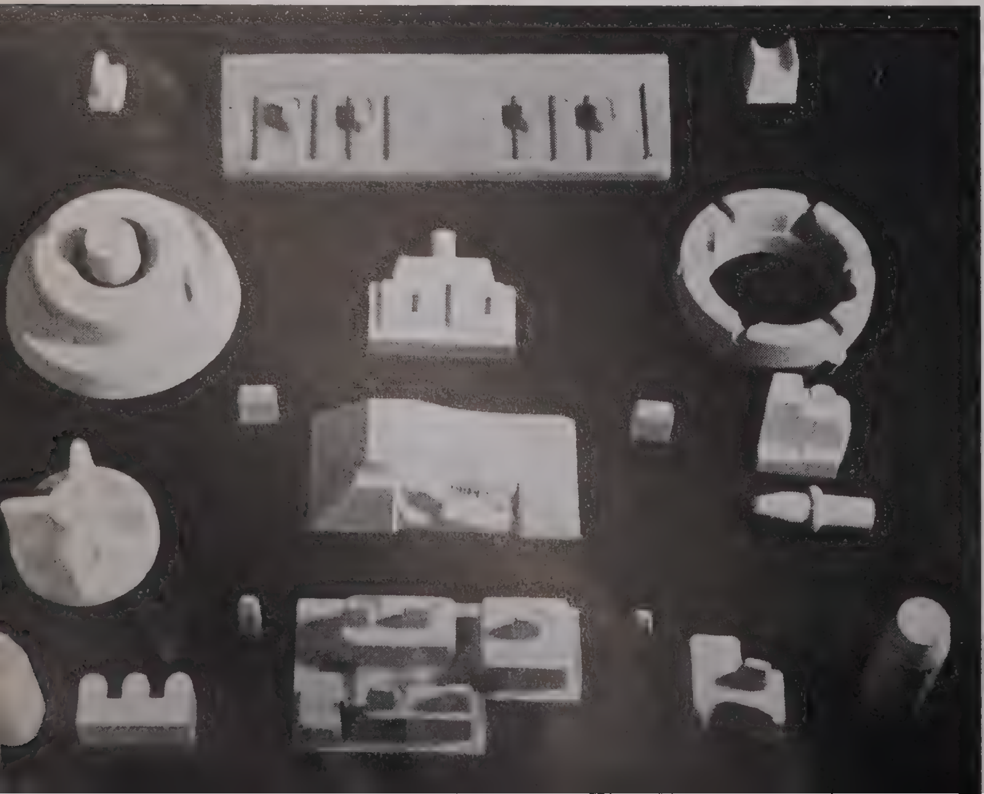

FIG. 1 — Typical cores baked by induction heating. Some of these cores are hand molded and some machine molded, but the same mix and binder are used for both.

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[1] *See "Gray Iron Foundry Modernized,"* THE IRON AGE, *Apr.* 22, 1948, *p.* 84.

Baking cores in 2 min through the use of an electronic core baking unit is described by the author. Among the advantages cited for this high frequency induction heating machine, which contribute to lower unit costs, are high-speed baking, small space requirements, lower baking temperature, better physical characteristics and less gassing in the mold. Core mixes are also given.

By VICTOR E. HILLMAN

Director of Research,
Crompton & Knowles Loom Works,
Worcester

tional cores and have a beneficial effect upon the quality of the castings. The yield of cores that pass inspection is unusually high and the cores are well suited for foundry use.

Advantages of the cores produced with the electronic core baking equipment include: Superior collapsibility; good permeability; excellent tensile and good green strength without cereal; good dimensional stability; freedom from hard spots; excellent shakeout, and low core scrap. Secondary, but exceedingly important, foundry benefits are fewer casting rejects (partly because gassing is low and cores collapse readily) and a decided reduction in cleaning costs because cores are not permeated by molten metal and disintegrate fully in the shakeout, so that supplemental means of core removal are not required.

It is also a great convenience to have cores that can be used immediately after baking and that (especially when rush orders have to be filled) can be had within a few minutes after core boxes are delivered to core making stations. On the other hand, cores have low if any moisture absorption and little deterioration in storage or in use, resist abrasion and do not crack easily.

There is also an advantage in that wet sand can be employed for core making, as long as moisture content does not exceed 5 pct. Mulling time is 5 min, or not over half that for sand used in conventional cores. Table I gives the composition of the core sand mix employed for induction oven baking of cores.

Electronic core baking in this foundry is done in a 30-kw (input) Ther-Monic tunnel-type unit built by the Induction Heating Corp. and operating on a frequency of 15 megacycles per sec. Fig. 2 is a schematic sectional view of the unit, while fig. 3 shows the feeding end of this unit. Cores are carried through the unit on a continuously moving woven wire belt, the speed of which is adjusted by a variable speed drive to suit the load passing through. Heating is ac-

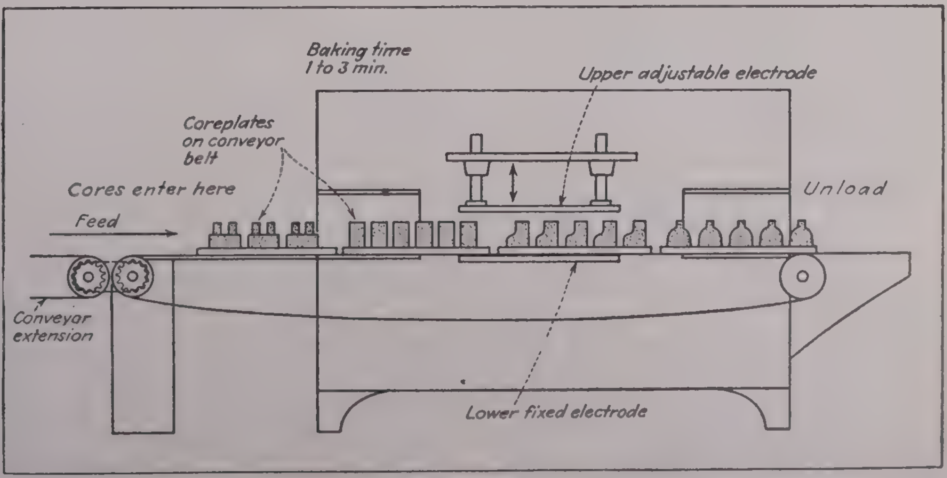


FIG. 2—Schematic diagram of the induction baking unit illustrating the manner in which the cores pass between the electrodes.

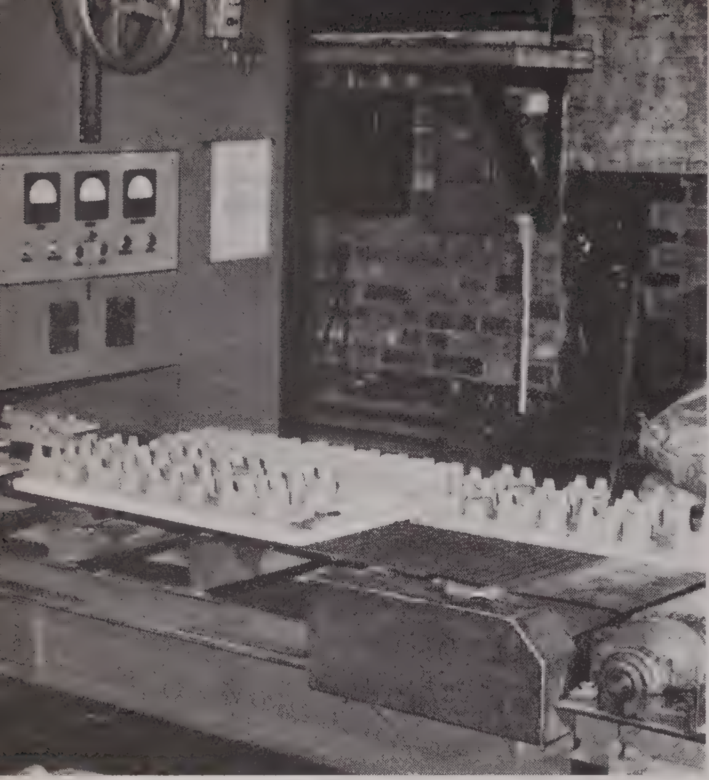


FIG. 3—Loading end of the induction baking unit, showing trays of cores entering the oven.

complished as the cores on trays pass between a pair of horizontal electrodes about 2 ft square placed about midway of the tunnel, as shown in fig. 4.

The trays (or plates) are of three types, each about ¾-in. thick, 12-in. wide and 30-in. long. As the trays are heated along with the patterns, they constitute a considerable part of the load. Heat absorbed by the trays is about proportional to mass, hence a low weight is desirable. Plywood trays are lightest, but are also most expensive. Many Transite trays, the same as are used in conventional baking ovens, are used but are being replaced. They are sturdy, but weigh 17 to 22 lb each and cost about 80¢ a sq ft. High weight makes for harder handling and increased heat absorption. A shift to Maranite (made from exploded silica) is in progress, as the trays weigh only 7 lb each, cost 55¢ per sq ft and are quite long lived.

Trays are loaded on the feed conveyer at benches along this conveyer as shown in fig 5, or at stations where a Demmler air machine or a conventional Tabor rollover machine do the core molding work. Machine stations have not yet been moved to points along oven feed conveyers, as a general rearrangement of the core room is in contemplation and location of the Ther-Monic machine itself may then be changed. In consequence, machine made cores are laid on trays that are shifted to racks and the latter are moved beside the conveyer to which the trays then are transferred.

After passing through the heating tunnel, trays of cores issuing on the belt are unloaded by hand to racks, as shown in fig. 6, and are ready to go to the foundry immediately. Although cores remain in the heating zone an average of only 2 to 2½ min and attain a temperature of about 275°F max, this is sufficient not only to evaporate all water but to polymerize the binder completely. Steam and fumes are drawn off from the heating zone by a fan and are discharged outside the building.

The high speed of heating and the thorough baking are a result of the heat permeating the cores thoroughly. It is not necessary, as in conventional core ovens, to allow time for heat to penetrate from the surface inward. Heat is generated at every molecule of each core as soon as the core enters the space between the electrodes. This results in uniform baking throughout the core and no burning occurs. Moisture in the cores is converted to steam very rapidly and polymerization of the binder is completed before the cores emerge from the heating area. No overheating can occur.

Such rapid heating might be expected to result in cracking or disruption of the cores, but neither takes place. The machine has a rated capacity of 650 lb of cores per hr but the weight put through depends upon the size of cores, their spacing on trays and the speed of the belt. The average output to date has ranged from 400 to 600 lb per hr which, for the size and type of cores being handled, is as many as the present core molding layout supplies to the belt. It is believed, however, that rates in excess of 650 lb per hr can be attained with cores of certain sizes and shapes.

Although fastest heating is attained when the electrode plates are as close together as will afford proper clearance for the cores (about 1 in. minimum clearance is recommended) the actual distance between plates usually is varied (by the handwheel shown in fig. 3) to suit the height of the cores. If height varies, as it often does, from tray to tray, spacing is set for the highest cores, yet the lower ones still receive adequate heating.

Except for this adjustment and for pressing a starting button when put in operation, no manual attention to the machine is required other than to set the belt speed at a point suited for the rate at which cores are being fed. Normal moment-to-moment variations in weight of cores fed do not require a change in speed as long as the heating time is sufficient for the maximum load going through. If the load is below the maximum, no harm results, as overcuring cannot result.

It is probable that a fixed electrode setting could be used without undue effect on output if any slight saving in labor resulting from not having to adjust speed was of significance. If two machines were in use and cores could be scheduled or segregated conveniently into two groups as to maximum core height (say, for example, 5 and 10 in.), the setting for each group could remain fixed.

Cores that have to be supported on driers are handled in this unit, but the driers must be of wood or other dielectric material. Cores can be

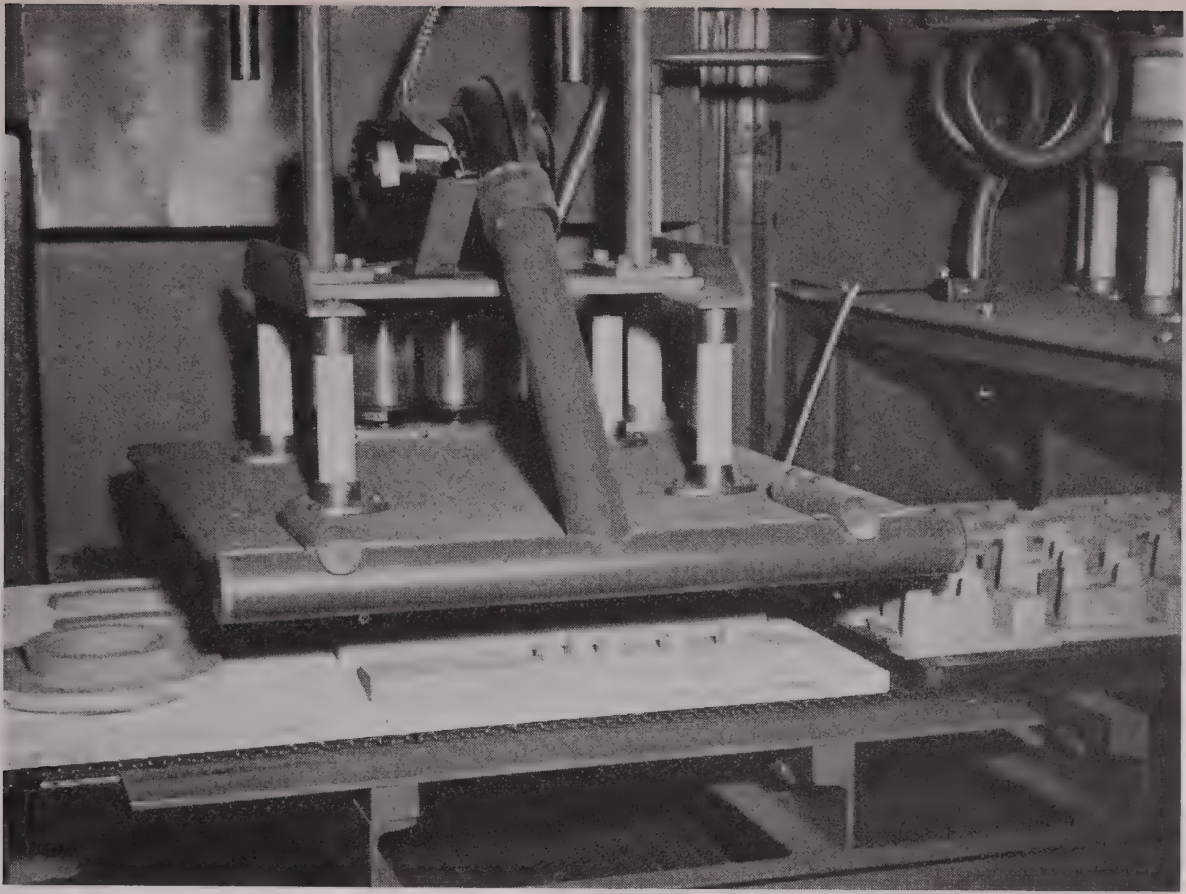
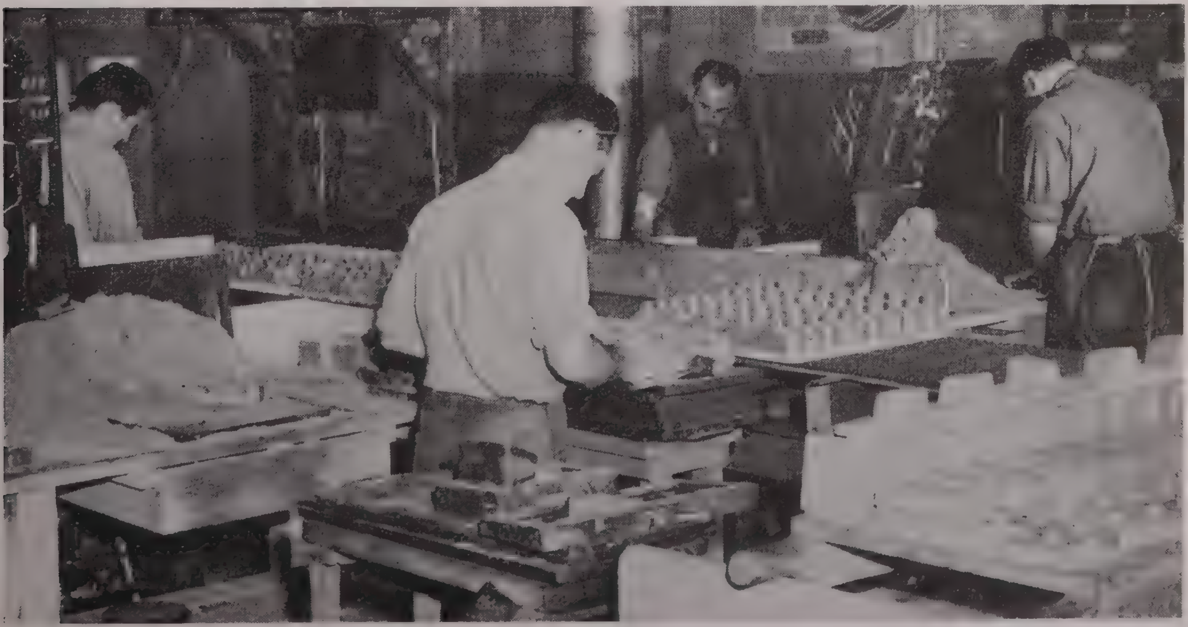


FIG. 4—Interior view of the oven showing cores passing between the upper and lower electrodes. Portions of the ventilating equipment are also shown.

reinforced by wires if the wires run about parallel to the belt, but if reinforcements are vertical they are commonly made of wood (applicator sticks) to avoid sparking when passing between electrodes. If a wire reinforcement, even a vertical one, does not come closer than ¼ in. to the upper or lower core surface it is not likely to cause sparking.

Actual cost of operating the electronic machine, including the current consumed, approximates a maximum of 48¢ an hour (at 1.6¢ per kwh), but on the average the actual operating

FIG. 5—As the cores are made, they are placed on trays which in turn are placed on the belt leading to the oven.



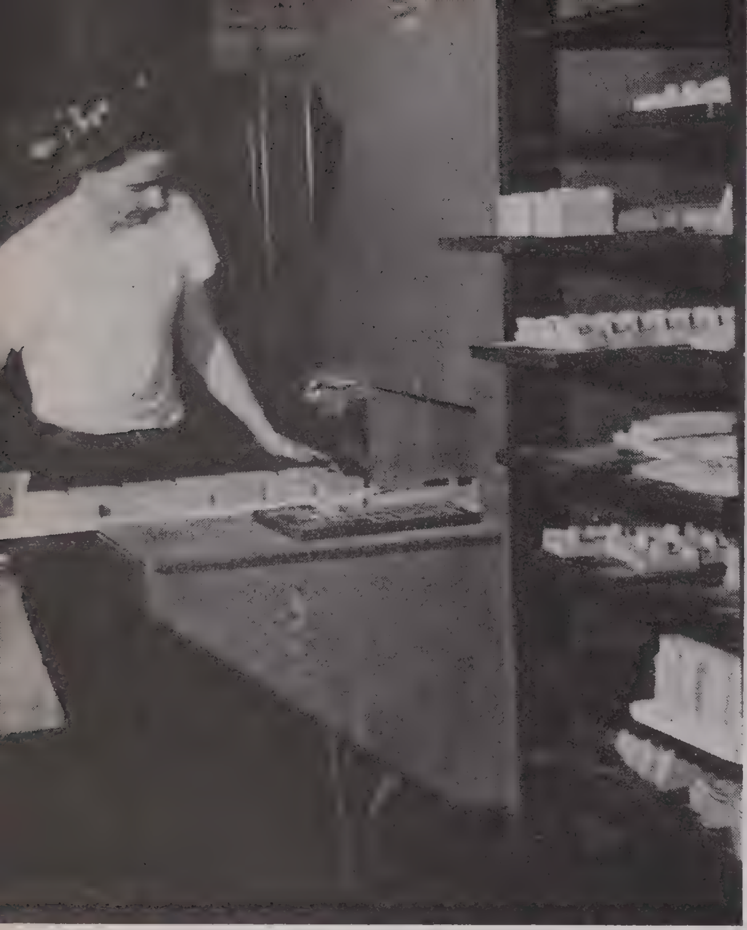


FIG. 6—Unloading end of the oven. Trays leave the oven cool enough to handle without gloves.

cost is from 30¢ to 35¢ an hr. Thermal efficiency is high as maximum energy requirements are low. There is no warm-up time and energy consumed is approximately proportional to the load. The heat that is generated, being in the cores themselves, has no significant effect upon the surroundings and the cores issue from the tunnel cool enough to be handled without gloves.

Successful core baking by electronic means depends, among other factors, upon using a binder of the proper type, hence considerable experimental work was done to find a binder best suited for the work. Of the binders tried, a vegetable drying oil gave trouble from moisture pickup. Lignites produced soft cores and those made with phenol - formaldehyde and straight urea formaldehyde gave trouble from contact dermatitis, but when suitable inhibitors are added to the latter it avoids dermatitis and is being used with good results. This type is being purchased from the Swan-Finch Oil Corp. It does not follow that other types, including some discarded, perhaps, cannot be made to operate satisfactorily but the type now used has thus far proved to be best suited for the particular conditions applying in this installation. Dermatitis is affected by weather, personal and other conditions but has been avoided with the inhibited binder being used.

Table I gives the core mix used for electronic baking. Four different formulas are used for cores baked in an oil-fired oven, but only one is needed for induction baking. In making cores for electronic baking, batches of mix weighing 800 lb. are prepared in a Simpson muller. Sand is purchased wet, but if moisture exceeds 5 pct dry sand is added to keep moisture below this level. Also added are 20 lb of powdered synthetic binder and 2.5 lb of boric acid.

After mulling, sand is put through a riddle and falls into buckets that are hoisted to the coreroom and are shifted on monorails to hoppers at benches or to carts that supply rollover and air machines. A great deal of molding of cores is done by hand at benches along the conveyer, but, where quantities warrant the core box equipment, a rollover is employed. Many pin and stock cores are made on an air machine. This applies especially to cores for electronic baking, but the same types of molding work are done with other mixes for cores to be baked in conventional ovens which still handle more than half the core requirements.

All cores baked electronically retain sharp contours and sharp edges do not crumble. Scratch hardness of 90 to 95 is attained. Finish and storage characteristics are excellent and gas content averages only 4.5cc per gram.

Low gas evolution from cores using the inhibited urea-formaldehyde binder helps avoid gas pockets and porosity around cores. As the cores do not absorb moisture either before or after being placed in the mold, no steam is

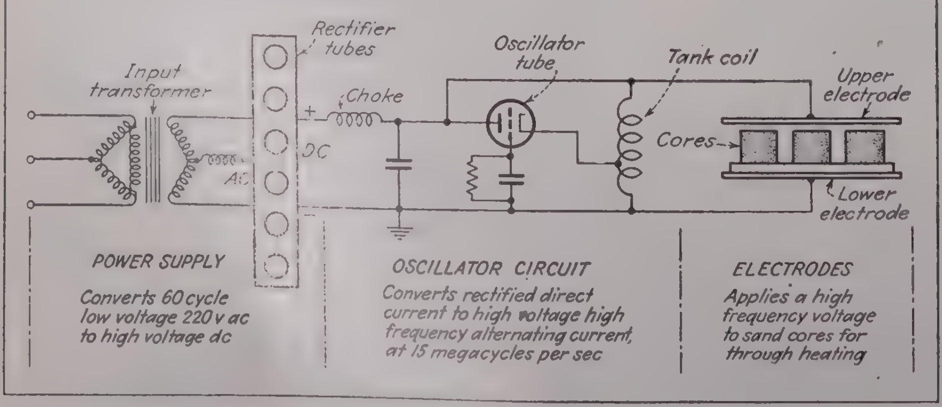

Input transformer
Rectifier tubes
Choke
+
AC
DC
Oscillator tube
Tank coil
Upper electrode
Cores
Lower electrode
POWER SUPPLY
Converts 60 cycle low voltage 220 v ac to high voltage dc
OSCILLATOR CIRCUIT
Converts rectified direct current to high voltage high frequency alternating current, at 15 megacycles per sec
ELECTRODES
Applies a high frequency voltage to sand cores for through heating

FIG. 7—Simplified diagram of the various circuits of the induction core baking oven.

evolved from the cores. Permeability is sufficient to permit escape of such gas as is formed. Hot strength is low enough to insure collapse of the core without damage to the casting as it solidifies and cores do not crack either before or after being placed in molds, hence cored openings are free of fins.

This latter fact, together with the fact that the binder is reduced to a fine powder by the heat of surrounding metal, make the cores easy to remove. In fact, they disintegrate fully in the shakeout and run freely out of cored openings. It is not necessary to use special tools for core removal and this materially reduces cleaning costs.

In addition, casting surfaces produced by cores remain unusually smooth and free from burned-in sand and spongy metal, with the result that castings are easier to machine and fewer scrap castings result. These effects mean much in reducing overall foundry and machining costs and savings on these scores alone are considered sufficient to warrant the investment in the new type of core baking equipment.

The electronic baking equipment is controlled by electrical and electronic units (see fig. 7) that include a power section, a control panel and an oscillator unit connected to the electrodes in the core baking tunnel. These units have proved reliable and are not expected to involve maintenance problems that cannot be handled by factory personnel familiar with other electronic equipment in the plant.

TABLE I

Core Mixture Used for Baking With Induction Heat

Core Mix:
- 133 lb Dividing Creek Washed and Dried Grade D
- 667 lb Marion No. 121
- 20 lb Synthetic urea formaldehyde binder plus inhibitors
- 2.5 lb Boric acid
- Total moisture not to exceed 5 pct

Sand Characteristics:
- Dividing Creek Grade D: AFA Fineness No. 69; clay content 0.14 pct. moisture—dry
- Marion No. 121—AFA Fineness No. 121; clay content 0.74 pct; moisture 4.0 to 5.0 pct

Comments:

This mix takes the place of four originally used with conventional baking. Batches of above mix vary less in character than conventional mixes. Although inclined to be slightly sticky, this can be adjusted by readjustment of the binder.

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Welded Fittings Fabricated from Flat Steel Plate

WHEN the Kings County Lighting Co. encountered difficulty in obtaining cast iron welded fittings of the type needed for a natural gas line running into their new compressor plant, the Akweld Construction Co., Brooklyn, N. Y., manufacturers of fuel oil tanks, was consulted. The Akweld company made up the required fittings from flat steel plate. The sections were first cut from ¼ in. and 5/16 in. thick steel plate with an Airco No. 10 Radiagraph oxyacetylene cutting machine and then rolled into shape. In all, 50 fittings were made up and fabricated. The fittings ranged in diameter from 8 to 50 in. Butt joints were welded from both sides and flanges were welded both inside and outside. In the photograph, the operator is shown welding one of the larger fittings, in which the flange is backed up to control distortion. Partially as a result of their success with this job, the Akweld Construction Co. has expanded its operations to include the manufacture of steel welded fittings.

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Bronze Foundry Realizes Savings

By PAUL R. HESSE
Engineer, Union Brass & Metal Mfg. Co., St. Paul

and

BRUCE SCHAFER
Manager, Electric Furnace Div., Kuhlman Electric Co., Detroit

LOWER cost of refractory linings and reduced labor melting costs have been realized in a large number of foundries, particularly in the nonferrous field, by the installation of modern electric melting equipment.

Typical of this is the experience of the Union Brass & Metal Mfg. Co., St. Paul. The entire production of this plant is devoted to bronze casting for plumbing materials. The bronze, (78 pct Cu, 6½ pct Pb, 2½ pct Sn, 13 pct Zn), is melted in 350 lb batches and tapped into a 400-lb preheated crucible. The melt is deoxidized by addition of 1 oz of 15 pct phosphorus copper per 100 lb of melt. Only two men are actually needed, but three men now handle the entire melting room, shown in fig. 1, from charge preparation to tapping, and maintain the refractory lining of the melting furnaces.

Between 1925 and 1928, three 350-lb capacity Detroit electric furnaces were installed in the Union Brass foundry. These furnaces had straight cylindrical shells, manually operated

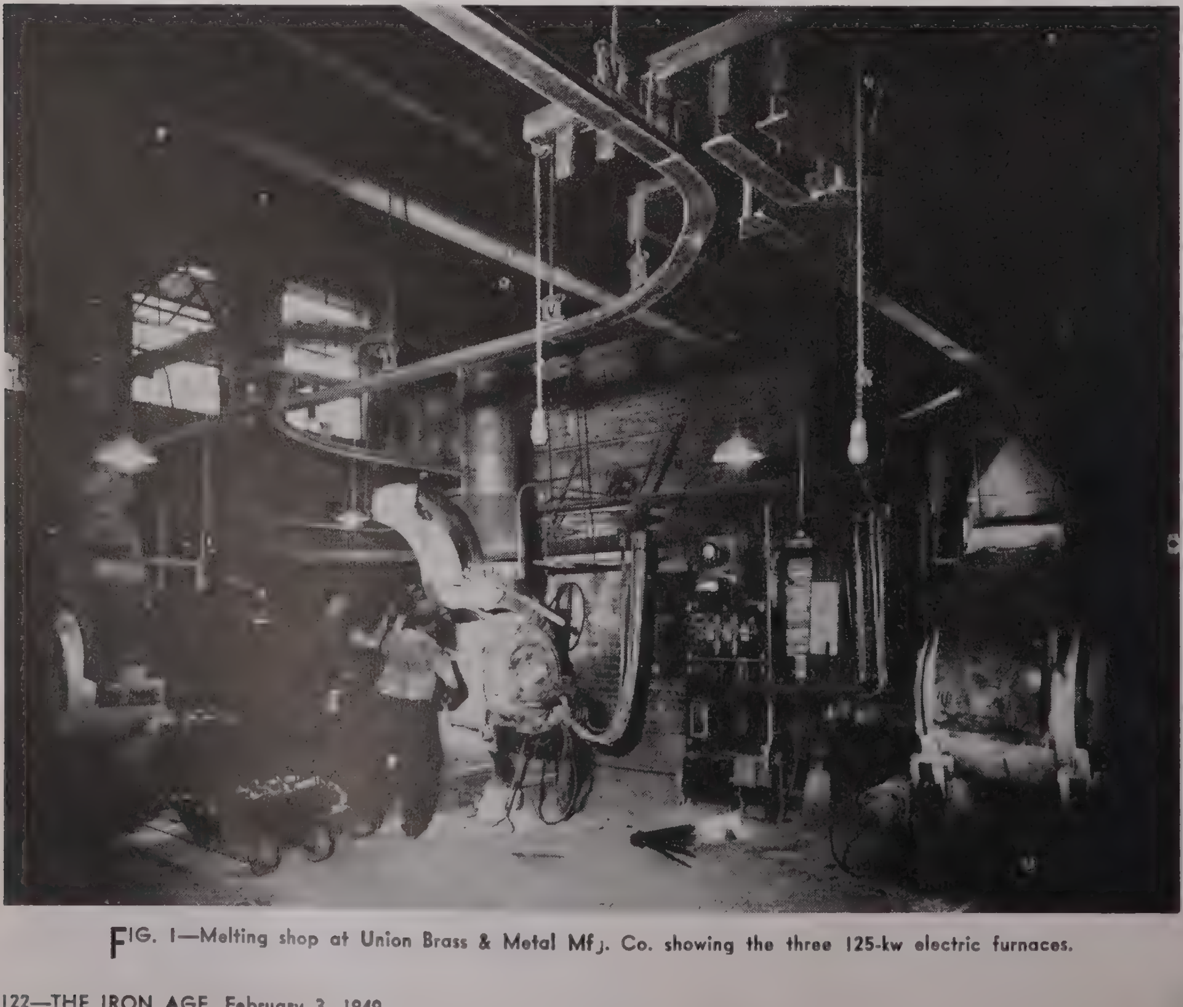


FIG. 1—Melting shop at Union Brass & Metal Mfg. Co. showing the three 125-kw electric furnaces.

By Modernizing Melting Furnaces

A program of modernization of three electric rocking furnaces used for melting bronze resulted in overall savings of $1.23 a ton, and other benefits. Among the modernization steps described by the authors are the installation of automatic electrode controls, conical shells and mechanical overtravel stops.

reversing switches to control the rocking action, and manually operated electrode controls.

History of the company's modernization program to bring the equipment up to present day standards begins in 1941. First automatic rocking controllers were installed. These controllers provide a variety of rocking schedules from which can be selected the most efficient schedule for the particular type and amount of metal to be melted. Soon after power is applied, the preset rocking schedules can be started. The schedules proceed automatically during the melting, without further adjustment.

Next step in the modernization of equipment was the installation of conical type shells. In fig 2 this style of shell is compared with the old cylindrical type. The new conical shells were lined with special refractory shapes of Mullite, a high temperature refractory. Chief advantages of the conical shell, as Union Brass discovered, are elimination of cold corners, a shell center further from the high-temperature arc, a slightly greater capacity, and a greater accessibility of lining for purposes of maintenance.

The final step in modernization was completed in 1946. The company installed automatic electrode controls and mechanical overtravel stops in the automatic rocking controller. This last feature is a movable steel stop which keeps the melting chamber from rolling over, should the electrical limit switches in the rocking control circuit fail. The stop is interlocked electrically with the push-button pouring station to prevent starting of the automatic rocking controller when the shell is in pouring position.

The melting operations are substantially unchanged from the period prior to modernization, and several important economies have since been effected. Foremost among these is a saving on refractory costs. When the refractory linings of the old cylindrical shells were melting from 450,000 to 550,000 lb of bronze, the linings needed patching every 8 hr of operation. Today, with the conical style shell, it is common to obtain 2,-

FIG. 2—A comparison of the old cylindrical shell with the newer conical type.

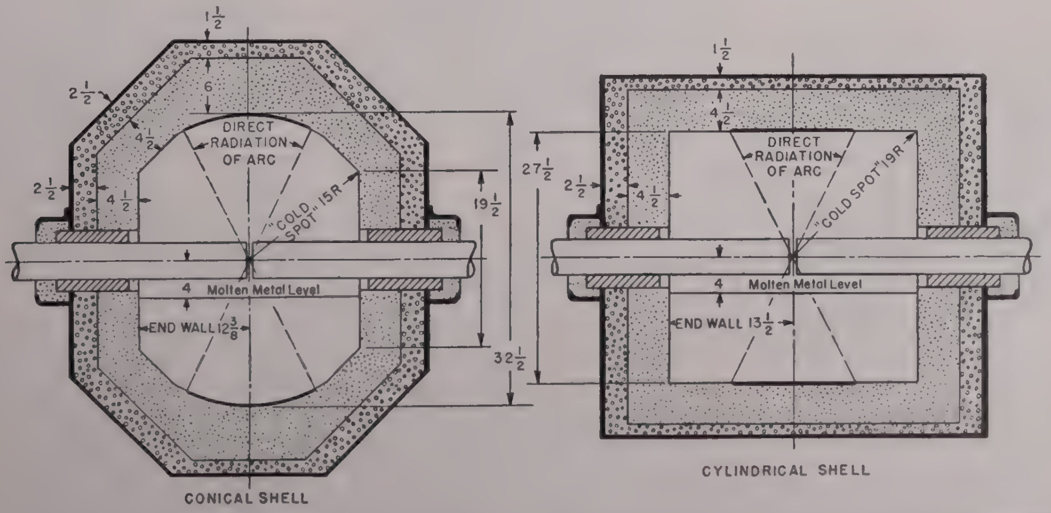


TABLE I

Typical Power Consumption in a 350 lb. Electric Furnace Showing Uniformity of Consumption

Heat No.*	Power Consumption, Kwh
1	75
4773	70
2	58
4774	56
3	52
4775	52
4	49
4776	49
5	49
4777	48
39	44
4793	43
40	43
4794	46
41	43
4795	48
42	45
4796	46
43	45
4797	45

*Heat series 1 to 5 and 39 to 43 started Oct. 14, 1946; the series 4773 to 4777 and 4793 to 4797 started July 25, 1947.

TABLE II

Comparison of Melting Costs Before and After Modernization of Furnaces

	1941	1947
Power	$3.76	$3.53
Electrodes	1.30	0.66
Refractories	1.08	0.72
Pouring Crucibles	0.45	0.45
Preheat Crucibles	0.74	0.74
Melt Loss	2.60	2.60
Labor		
Melting	4.24	4.24
Patching and relining	0.55	0.55
Mech. maintenance	0.07	0.07
Gate Preparation	1.05	1.05
Total per ton	$15.84	$14.61

000,000 lb of bronze per lining, with patching done every 16 hr.

Present patching practice is to reline the pouring spout and patch around the charging door every morning. Patching and preheating the furnaces requires about 1 man-hour and 35 lb of material. Over week-ends the accumulated slag is chipped out and holes in the refractory are enlarged and keyed for heavy patching.

Next in importance to refractory life is power consumption. As a unit, a saving of 2 kwh per heat does not appear impressive. Over a year's operation, however, it means a savings of some $600 in power alone. Additional savings in power consumption stem from the lesser number of new linings that need to be cured. This brings the total savings to around 12 kwh per ton. Further, power consumption and melting time, per heat, remain nearly consistent over the entire length of the refractory life. The data in table I illustrate the uniformity of power consumption in the conical shell.

The reduction of refractory and power costs is highly important. And, at the present price of graphite electrodes, any saving in electrode consumption is important. In 1944, working to closer machining tolerances than ever before, the foundry was operated but one shift per day. At that time, electrode consumption averaged 280 lb of metal per pound of graphite.

In 1945, still prior to the installation of automatic electrode controls, but with the new type of conical shells installed electrode consumption averaged 410 lb of metal per pound of graphite. Following installation of the automatic electrode controls in 1946, electrode consumption dropped to 600 lb of metal per pound of graphite. At 20¢ per lb, this represents a saving of about 30¢ per ton of bronze melted.

A comparison of past and present melting costs for the Union Brass & Metal Mfg. Co., given in table II, show, with labor adjusted to 1947 levels, an over-all saving of $1.23 per ton on a yearly production of 720 tons.

From the data in table II, it will be noted that the labor costs are unchanged. However, the addition of automatic electrode controls has eliminated the need of manual regulation of power input and one furnace operator could be dispensed with entirely, further reducing labor costs.

Infrared Detector Spots Faulty Power Line Joints

SOURCES of unusual heat, indicative of faulty joints in overhead power line conductors, are quickly located with a novel infrared detector developed in the laboratories of the National Research Council of Canada. The unit is described in a report now available from the Office of Technical Services, Dept. of Commerce, Washington.

The instrument is tripod-mounted and is used like a surveyor's transit. It is optically pointed to the power line and electrically records differences in temperature between the conductor and the joint by means of thermal radiation focused on a bolometer by a parabolic reflector.

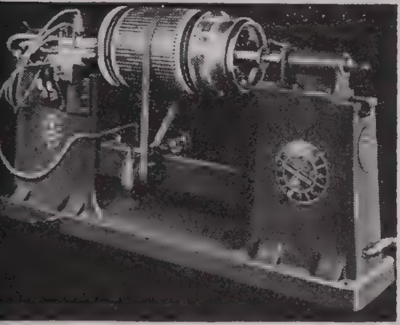
The most satisfactory design employs a thermistor-type bolometer in a ac bridge circuit. Signals from this bridge, amplified by a conventional ac amplifier with a phase sensitive rectifier output, operate a 50 microamp zero-center meter, which serves as an indicator that can be viewed simultaneusly with the sighting device so that the operator can see the source of unusual heat.

Production models of the detector will be completely selfcontained, using subminiature tubes and batteries. For easy servicing in the field all circuits will be constructed as plug-in units.

New Production Ideas . . .

Production machines for brazing, flash-butt welding, tracer-controlled turning, grinding-polishing-deburring, thread rolling, powder metal pressing, and abrasive blast cleaning are featured in this issue. Small tools and attachments include a punch press index feed, perforator and chip breaker grinding fixtures, and grinding wheels.

TO facilitate brazing and silver soldering of electric generator and armature coil ends in repair shops, a new brazing machine is said to insure uniform brazing results that meet the most rigid specifications. The CBG-24 can accommodate armatures from 18 to 42 in. diam. It also can be used as a source of power supply for portable brazing equipment. The brazing machine has a built-in heavy duty 24 kva transformer with an automatic regulating coil and an 8-point heat control selec-or. All common forms of brazing alloys may be used, such as foil, wire, strip and powder. Installa-ion requires only connections to water, air and power supply lines. *American Electric Fusion Corp. For more information, check No.* 1 *on the attached postcard.*

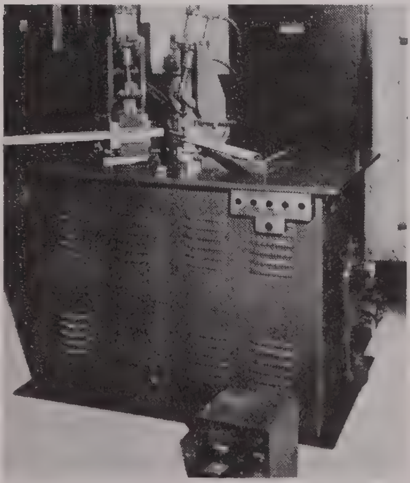


Form-Bar Bender

COLD bending copper, aluminum, brass and mild steel bar and strip through a complete range of sizes from ⅛ x 1 in. to ½ x 6 in. is possible with a new portable form-bar bender. No special skill is needed in operating the machine to make bends up, down or sideways or make twists, short offsets and Z bends. Vertical mounting makes the tool flexible for handling the longest length of material. *W. R. Scott & Son. For more information, check No.* 2 *on the attached postcard.*

Flash-Butt Welder

A NEW push-button flash-butt welder for pipe and tubing has swivel mounted welding heads so that two pieces can be butt welded or flash-butt welded at an angle. The ends are cut square for both types of welding. Action is entirely automatic and is controlled by micro switches. Each clamping jaw has its own foot valve and air cylinder with pressure regulator. The upset action has its own supply and controls. *Rex Welder & Engineering Co. For more information, check No.* 3 *on the attached postcard.*

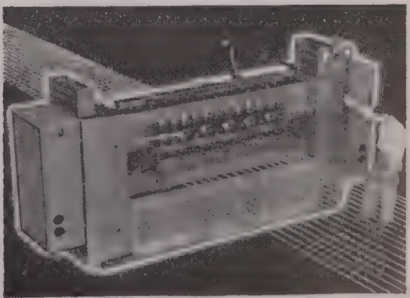


Hardfacing Welding Rods

TWO new tungsten carbide welding rods, Tube Tungsite and Tungrod, for reclamation and hardfacing applications, have been announced. Tube Tungsite consists of tungsten carbide particles of various screen sizes encased in a steel tube. When applied as a welding rod, the steel tube melts forming a molten matrix and since the particles of tungsten carbide have an extremely high melting point, the particles do not melt but remain in suspension. Since 50 to 60 pct of the deposit is tungsten carbide particles, rapid solidification occurs, evenly distributing the particles in the weld deposit. Tube Tungsite is available in two types, bare for oxyacetylene application and bare for electric application. Tungrod particles are from 40 screening down. Tungrod is applied in two types, bare for oxyacetylene application, and coated for electric applications. *American Manganese Steel Div., American Brake Shoe Co. For more information, check No.* 4 *on the attached postcard.*

Wire Welder

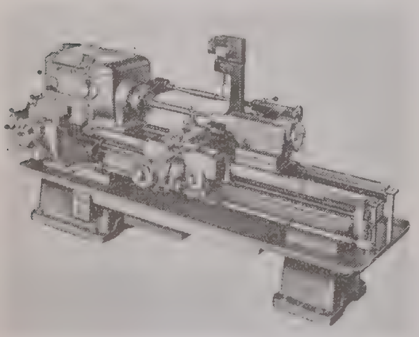
A SPECIAL production machine having 12 welding pressure heads with die blocks, each arranged for welding one or more wires simultaneously so that longitudinal wires of any spacing from 1/16 in. wire spaced ¼ in. center to center, to 5/16 in. wire spaced ½ in. center to center, and a maximum



spacing of 12 in. in each case, may be welded with no adjustment of the electrode or the heads. Using the Sciaky Three-Phase system, uniform current distribution is obtained over all the die blocks and a direct weld is made which permits the loading of the cross wires from above. The cross wire is loaded automatically and the longitudinal wires are indexed automatically with an adjustable spacing. *Sciaky Bros., Inc. For more information, check No. 5 on the attached postcard.*

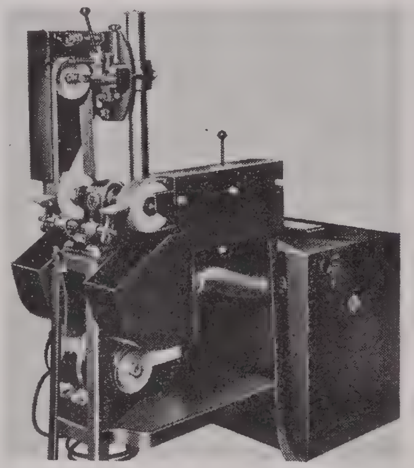
Tracer-Controlled Lathe

KNOWN as the Copymatic, a new tracer-controlled dual-purpose lathe embodies an all-hydraulic tracer control in Model X 16-in., 20-in. medium and heavy duty, and 25-in. medium duty lathes. The outstanding feature of the lathe is the ease and facility with which the unit can be converted from standard lathe operation to automatic duplication and vice versa. Changeover is instantaneous, accomplished by turning two valves and a switch. On duplicating work, the tracer will operate from round or flat templates, doing any type of turning or boring jobs within its range. The first piece, being machined by standard operation of the lathe, can be used as a template for the production of the balance of the lot. The swing capacity of the standard lathe is maintained because standard compound rest and cross feed screw assemblies are used and directly connected to the hydraulic piston operating within the cylinder mounted on the rear of the carriage. The hydraulic tracer equipment on the Copymatic includes a hydraulic pump and motor, purolator, air filter, tracer head and one stylus, valves and switches, hydraulically operated clutch and brake for controlling longitudinal feed, hydraulic piston and cylinder for cross feed control, and supports for the templates. *Lodge & Shipley Co. For more information, check No. 6 on the attached postcard.*



Grinding-Polishing Machines

A NEW H-type portable grinding, polishing and deburring machine using coated abrasive belts instead of wheels is built in four different models. The use of two different grit belts at the same time is possible and speeds up production of small parts that require more than one finishing operation. The machine can be converted into a buffing machine. All models consist of the arbor head, an idler unit, a straight-faced contact roll and abrasive belts. Extending 3½ in. out from the inner flange at each end, the ⅝-in. arbor shaft has a 2½ in. acme thread at the ends to take contact rolls from ⅞ to 2⅞ in. wide. Aluminum oxide belts in four different grits are available for general use on steel, brass, forgings, die castings and some plastic materials. Silicon carbide belts are recommended for hard materials of low tensile strength. *Delta Mfg. Div. For more information, check No. 7 on the attached postcard.*



Grinding Wheels

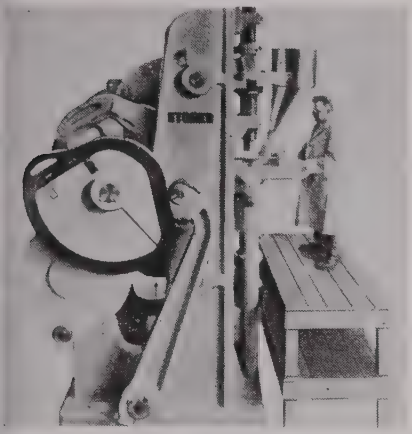
COATING each grain of a grinding wheel with a microscopically thin sheet of carbon in an isotropic vitrescent form is known as the Buxite process and makes wheel highly effective for grinding carbide tools and other superhard alloys, according to the manufacturer. Fast cutting is accomplished with light passes that generate little heat, thereby preventing checking and cracking of the tool. The need for diamond wheel grinding is greatly reduced and frequently eliminated entirely *Mansco Grinding Wheel Co. For more information, check No. 8 on the attached postcard.*

Thread Roller

THE new Reed A32 cylindrical die thread roller extends thread rolling to 4-in. diam threads. In this horizontal type machine, the work blank is supported and positioned between three synchronously rotating cylindrical dies. The three dies act on the blank simultaneously and hold it rigidly in proper rolling position. The rolling pressure causes the material to follow the pattern of the dies that are said to remain in match during rolling. Thread form and lead are, therefore, controlled to close limits by matched precision-ground cylindrical dies. Work dimensions are controlled by positive adjustments for diameter, length and taper. Adjustable scroll rings in the head provide for approximate setting of the dies, while the final work sizing is obtained by micrometer adjustment. A mechanical feed using a positive cam action insures definite and controlled rate of penetration predetermined length of dwell, and positive duplication of size. *Reed Rolled Thread Die Co. For more information, check No. 9 on the attached postcard.*

Powder Metal Press

USE of air cylinders in place of springs for holding the rocker arm on both upper and lower cams the shaker cams and the core rod cams of the improved Stokes P- cam-type powder metal press is said to provide smoother press action. The use of twin-disk clutch and brake as standard equipment helps take the load off the motor, since the flywheel is allowed to come up to full speed before the clutch engages. Adjustment of punches and dies can be made while the flywheel is running. Press core rods have been strengthened to take up to 15 tons as a movable core rod and 30 tons as a stationary core rod. The additions of a high slip motor, coupled with the heavier flywheel, has permitted a reduced motor. The press has a maximum depth of 8 in. and 4-in. max diam of piece. *F. J. Stokes Machine Co. For more information, check No.* 10 *on the attached postcard.*



Centrifugal Pump

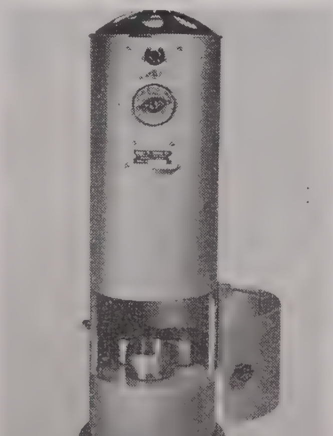
WHERE moderate pressures and volumes are required from a centrifugal pump running at 1725 rpm, the performance curve on the new Model H pump shows a shut-off pressure of 19 psi, 10 gpm at 15 psi, 15 gpm at 10 psi, and in excess of 20 gpm at free flow. The pump is constructed in either bronze or aluminum, with lifetime mechanical rotary seal. Units are available with motors ranging from 1/6 to 1/3 hp. *Eastern Industries, Inc. For more information, check No.* 11 *on the attached postcard.*

Variable Speed Transmissions

TWO additions to the Graham line of variable speed transmissions include the Model 41 MW with built-in motor and worm reducer and the 41M with built-in motor equipped with Stearns magnetic brake. Available in ratios of reduction of 5, 12, 18, 27 and 54 to 1, the gear box may be fastened to the transmission housing to horizontally position the slow speed shaft; or the output shaft may be projected vertically. The main transmission housing provides for mounting with four supporting bolts to permit the drive to be fitted in as standard equipment in the layout of slow speed machines. The 41M is designed for machines requiring instant stoppage when the motor power is shut off and provides a choice of infinitely variable speeds. *Graham Transmissions Inc. For more information, check No.* 12 *on the attached postcard.*

Drying Oven

A SPEED oven that cuts laboratory drying time in half has a drying space 8 in. diam x 6 in. high in a unit 29 in. high. Power requirements are 2800 w at 115 or 230 v. A motor driven fan forces filtered air past electric heating elements, the air temperature being thermostatically controlled at any temperature between 150 and 350°F. The heated air flowing against and past the sample in the oven picks up the moisture, or volatile material, obtaining a rapid drying rate. A 3-in. diam atmosphere exhaust connection is provided so that the heated air and obnoxious fumes can be piped into an exhaust hood or duct. *Harry W. Dietert Co. For more information, check No.* 13 *on the attached postcard.*



Blast Cleaning Cabinet

HYDRO-FINISH, a modified form of impact blasting with an abrasive suspended in liquid, uses extremely fine mesh abrasives for blast cleaning precision machined parts, holding within tolerances as close as 0.0001 in. The process is also being used in the maintenance of dies and molds. Hydro-Finish is a simple process accomplished in a watertight cabinet provided with a hopper tank for mixing, storing and re-collecting the suspension. A circulating pump delivers the liquid to the blasting nozzle and velocity is imparted at this point by an injection of compressed air. Material as fine as 5000 mesh equivalent is already being used. By varying particle size, particle hardness, air pressure, distance of gun from work, and liquid-abrasive ratio, or combinations of these factors, almost any number of finishes and uses are possible. The cabinets are available in four sizes. *Pangborn Corp. For more information, check No.* 14 *on the attached postcard.*

Pangborn
HYDRO-FINISH CABINET
Pangborn

Tap Guide

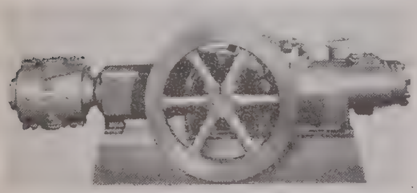
A NEW portable tap guide permits tapping through an opening in its base. It is used for hand tapping, but will also fit into a lathe tailstock. The spindle pulls out easily for lathe use or as a tap extension for hard-to-get-at-places. It takes just a few turns of the spindle—winds through continuously, with no backoffs. It measures 13 x 8 x 14 in. and has seven adaptors ¼ to ½ in. *Dahlstrom Mfg. Co. For more information, check No.* 15 *on the attached postcard.*

Punch Press Index Feed

AN automatic dial index feed for punch presses has a standard table of 12 in. diam, with larger tables available on special order. Space is provided for air ejectors and automatic loading mechanisms. The die space located on the rear of the table is 3½ x 3¾ in.; and the overall height is 3½ in. The Speedex dial feed table can be adapted to any ordinary punch press without altering the press. It is driven by an eccentric on the crankshaft of the press. Because of the design of the positive feed mechanism, the Speedex will repeat and lock itself at each stroke of the press. *De Castro & Associates. For more information, check No.* 16 *on the attached postcard.*

Air-Gas Compressor

A NEW air or gas compressor powered by a multi-fuel engine consists essentially of a single-stage, positive-displacement cylinder driven through a crosshead. It operates at 250 to 450 rpm, delivering air or gas at pressures up to 150 psi. The compressor cylinder is equipped with a bottom discharge for gas condensates. The Lorain engine produces from 17 to 34 bhp and operates on diesel oil, clean crude, natural gas or butane. The large capacity oil reservoir and condenser-type cooling system are adequate for all load conditions regardless of climatic temperatures. *White-Roth Machine Corp. For more information, check No.* 17 *on the attached postcard.*

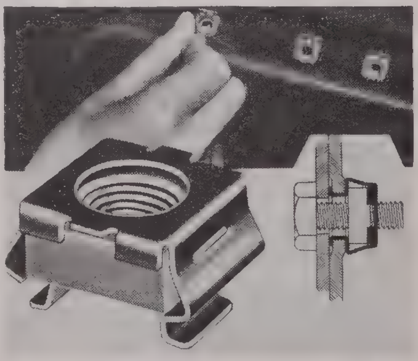


Plastics Tap

THREADING holes in plastic materials is possible with a multi-fluted tap that has been tested in plastics that are hard and soft and with either cloth or glass fillers. It is said to produce smooth threads of uniform size and remains sharp after continuous usage. The multi-fluted design provides for fast chip disposal; specific modifications in cutting angles have been developed for each type of plastic to be threaded; and a special surface treatment assures proper lubrication regardless of material. With the use of these taps it is reported production rose from 135 pieces per tap to 3200 pieces per tap. *Hy-Pro Tool Co. For information, check No.* 18 *on the attached postcard.*

Speed Nut Retainer

SAVINGS in operations requiring the fastening of square nuts to sheet metal panels are claimed for the new speed grip nut retainers. They easily and quickly snap into place by hand or with a screw driver and their spring steel prongs hold the nut in bolt-receiving position. No wrench is needed to hold the nut in place while the bolt is tightened. Pre-assembled, the speed grip is a unit, ready to be snapped in place. It comes in a complete range of sizes, the screw size and panel range stamped in the metal of the fastener. *Tinnerman Products, Inc. For more information, check No.* 19 *on the attached postcard.*



Perforator Grinding Fixture

FASTER setups may be made with a higher degree of accuracy and all types of regular and irregular contours may be ground with a new versatile perforator grinding attachment, the Grind All Fixture. Irregular shapes concentric with shank may be ground within ±0.0002 in., it is reported. Adjustable stops permit swing to any number of desired degrees. A V block located in a T slot in the center of the index plate can be adjusted to any desired position within ±0.0002 in. The index plate has 24 15° graduations. The fixture may be used for concave and convex radius dressing and applied to the grinding of carbide *Harig Mfg Corp. For more information, check No.* 20 *on the attached postcard.*

Chip Breaker Grinding Fixture

USING a pre-loaded ball bearing spindle, a new compact precision fixture provides for fla or concave grinding of chip breakers on tungsten carbide insert typ bits. The spindle is ground in th fixture to assure perfect concentricity. Clearance from base to fac of the collet is 5½ in., permittin vertical positioning under th wheel. Calibrated scales provid for setting at desired angles an interchangeable index plates assur true triangular and square forms The fixture is designed for use wit surface grinders and can be use with cutter grinders. Special collets for square, round, triangula and rectangular carbide insert are available in ¼, ⅜, and ½-in sizes. *Royal Oak Tool & Machin Co. For more information, chec No.* 21 *on the attached postcar*

Die Transfer Table

TRANSFERRING dies from press having an extended bas to a die handling table can be don by the use of a hydraulic elevating table having an overhanging top, counterweighted to provide proper balance when handling dies weighing up to 300 lb. The table is furnished with a 14 x 24-in. overhanging section that serves to bridge the gap caused by the press base extension. The table can be hydraulically elevated from 28 in. in the lowered position to 44 in. in the elevated position. The unit has a 30 x 30-in. main top, single speed foot pump, floor lock type brake, two 5-in. diam swivel casters and two 5-in. diam rigid casters. *Lyon-Raymond Corp. For more information, check No. 22 on the attached postcard.*

Steel Wire Pallets

EIGHT-WAY steel wire pallets and collapsible Cargotainers are designed for strength, service, and accessibility in handling, shipping and storing castings, stampings, metal parts and other diversified products. They feature lightweight construction; perfect stacking; strong, durable base; easily fitted, positive locking; and flexible helix attachments to ends and sides, insuring complete and compact collapsibility. When stacked, the side panels of the Cargotainer support weight of the units above. When collapsed, they require one-quarter the space. Pallets can be entered from sides, corners, and ends. Capacity of the Cargotainer is 2000 lb. *Pittsburgh Steel Products Co. For more information, check No. 23 on the attached postcard.*

Copper Welding Rod

THE self-fluxing property of Silbrax, in a new internally fluxed gas welding rod for welding deoxidized copper, prevents repeated rod oxidation and hence faulty weld metal. The heat is applied first to the metal and then transmitted to the flux, therefore, keeping a proper balance at all times between melting metal and flux. Silbrax is also used as a filler rod for carbon and inert arc welding. *Arcos Corp. For more information, check No. 24 on the attached postcard.*

Lift Truck

REDUCTION in handling time and costs is offered users of the semi-live skid system with a new electric tractor. A wheelbase of 40 in. permits short turns in close quarters. Two speeds forward, two in reverse and dynamic brakes are finger tip controlled. It has two front driving wheels and the differential transmission is sealed in lubricant. A power hydraulic jack at the rear of the tractor lifts the front end of the skid. *Lift Trucks, Inc. For more information, check No. 25 on the attached postcard.*

Non-Slip Paint

SURE-FOOT is a new non-slip abrasive paint, formulated for application to industrial floors where slippery conditions prevail. It protects the surface against wear of heavy traffic. The abrasive properties are provided by carbide crystals. Sure-Foot is applied by brush or trowel, dries overnight to a tough traffic resistant surface that remains non-slip whether wet or dry. It adheres to wood, concrete, steel, aluminum, solid or perforated areas, and is available in gray, red, black, green, and blue. *Frost Paint & Oil Corp. For more information, check No. 26 on the attached postcard.*

Metal Cleaning Compounds

TWO alkaline metal cleaning compounds, Terj and Ferro-Terj, have been developed for industrial washers. Terj removes light shop soils and is used for cleaning aluminum. It will not pit, corrode or discolor aluminum when used in a spray washer. Ferro-Terj is a heavy duty metal cleaner that removes tenacious soils such as drawing compounds from steel parts. Both cleaning compounds are free-rinsing and leave no deposits on finished work to interfere with subsequent painting or plating operations. *DuBois Co. For more information, check No. 27 on the attached postcard.*

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Steelmaking

PROCESSES and equipment used in steelmaking, from limestone quarrying to temper rolling, are described in educational booklet. Related operations, such as freighter unloading and electrolytic tinning, are included. *Inland Steel Co. For more information, check No. 28 on the postcard.*

Electrostatic Spraying

ENGINEERING data on electrostatic paint spraying and detearing process is given in bulletin. The process reduces overspray paint loss from 40 to 60 pct and can be applied to irregular as well as regular shaped articles. *Ransburg Electro-Coating Corp. For more information, check No. 29 on the postcard.*

Turning Rolls

BULLETIN 68 gives information on variable speed turning rolls for both manual and automatic welding of tanks and other cylindrical containers and for other rotation jobs. Capacities of the units range from 3 to 75 tons. *Reed Engineering Co. For more information, check No. 30 on the postcard.*

Tungsten Electrodes

TUNGSTEN electrodes, for use in arc welding with helium, argon or atomic hydrogen, are dealt with in bulletin 1.102. Properties of the electrodes are described and manufacture of the rods, from ore to finished product, is discussed. *Fansteel Metallurgical Corp. For more information, check No. 31 on the postcard.*

Bending Presses

DIMENSIONS and capacities of press brakes for bending, louvring, punching and other operations are given in 40-page booklet. Information on dies is included and engineering data on the tonnage required for punching and bending steel plate is given. *Cyril Bath Co. For more information, check No. 32 on the postcard.*

Drilling Unit

FOLDER describes a small versatile drilling unit adaptable to drilling, tapping, reaming, centering, counterboring, countersinking, hollow milling, rivet spinning, tube facing, deburring, chamfering and other operations. *Black Drill Co., Div. of Black Industries. For more information, check No. 33 on the postcard.*

Power Units

BULLETIN 8519 reports on hydraulic electric power units, with ratings from 1 to 20 hp, in which power is transmitted by a fluid drive from the motor, through a vortex of oil, to the driven machinery. Design permits smooth acceleration and shock absorption. *American Blower Corp. For more information, check No. 34 on the postcard.*

Foundry Ovens

BULLETIN 31 gives information on batch type foundry ovens. Car, rack, truck, drawer and shelf type ovens are shown. Bulletin 66 describes spray booths designed with water-curtain scrubbers to assure air cleaning. *Despatch Oven Co. For more information, check No. 35 on the postcard.*

Power Substations

ADVANTAGES of incorporating transformers, switchgear, motor controls, power rectifiers and other electrical equipment into standardized load center unit substations are described in bulletin. Power savings, greater safety, and increased flexibility are claimed. *Allis-Chalmers Mfg. Co. For more information, check No. 36 on the postcard.*

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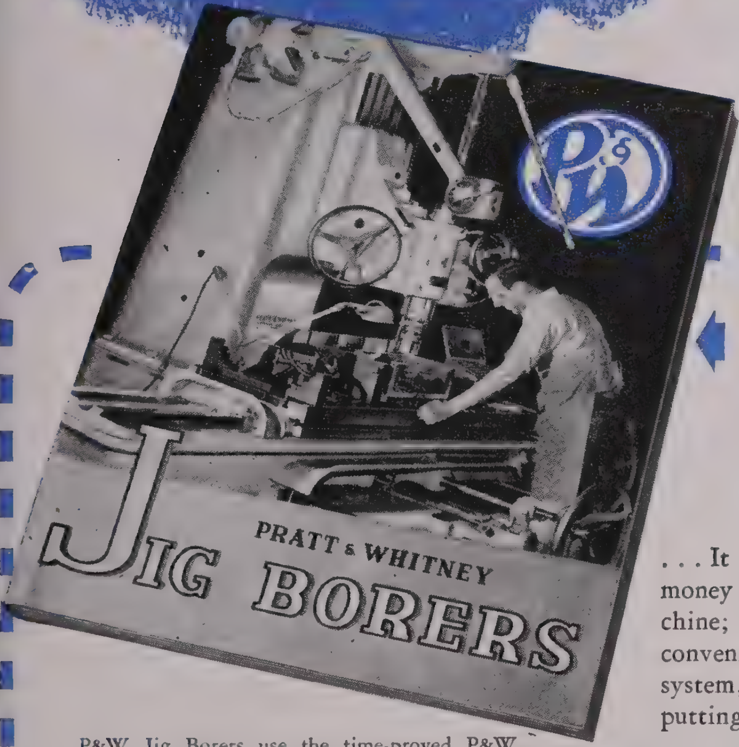

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Assembly Line . . .

WALTER G. PATTON

• Influence of styling as a factor in sales to be tested during 1949 . . . Goad describes steps taken by GM in designing new models . . . 1949 Pontiac introduced.

DETROIT—To many Detroiters 1949 looks very much like the year in which automobile styling is going to be critically tested as a factor in the sale of motor cars.

Probably this has come about quite by accident. It has been observed, however, that in the 1949 Ford models, styling probably carries more weight than any other single factor. With Chrysler, styling—that is the smooth sweeping lines that delight the artist—have been erased wherever it became apparent that passenger comfort would have to be compromised to satisfy the artist. GM, on the other hand, has taken a middle road. The stylists' contribution is readily apparent in the new GM models. It is equally evident to close observers that the hand of the manufacturing designer and engineer whose job it is to see that GM cars can be built to sell at a price equal to or less than its competitors has also carried considerable weight.

Ford has made the most radical design change of all major producers in its 1949 cars. The Ford, Lincoln and Mercury are new from tires to top. The styling change from the previous models is a complete right face. This has had important advantages to Ford: it shakes off the past, cleanly and completely — which Ford was anxious to do. The new Ford sales appeal, it appears, will be directed as much to women as to men. In its sales talks, Ford is currently stressing a new thrill in motoring as well as the means for accomplishing it.

There are, however, some penalties involved in a radical styling change such as Ford has made, including excessive tooling and manufacturing costs, initially at least, and a compounding of manufacturing and service problems.

Another possibility in a radical model change that is very real to the automotive industry is this: the public may not "go" for the new cars. Evolution—not revolution—is universally accepted here. Scarcely a day goes by in Detroit but the ghost of the Chrysler Airflow stalks across the desk of some Detroit auto officials. Deservedly or not, such mistakes are the industry's greatest nightmare.

GM has, as mentioned earlier, chosen a middle path. Extensive but not radical styling changes have been made. Particularly in Chevrolet, GM has made important engineering changes that should result in substantial reductions in manufacturing costs.

GM recognizes that styling plays an important part—a very important part—in the sale of an automobile. But GM also recognizes that styling, plus performance, plus economical manufacture must all be blended successfully if the car producer is to give the buyer optimum value. GM still has its nose pointed squarely at its claims for greater values. It will not be easy, even for its competitors, to deny GM's claims in this respect.

Chrysler, meanwhile, appears to be following a somewhat different philosophy. Its 1949 car appeal is directed primarily at the man who spends a good share of his time telling the industry how to build automobiles. Changes in Chrysler styling, while more extensive than will appear at first glance, are not as evident as the changes made by other car producers.

IN its 1949 cars Chrysler gives the nod every time to passenger comfort and sound engineering in preference to styling. Buyers of Chrysler's new cars will be getting exactly what many have said they wanted for years — ample headroom, plenty of legroom, easy to get in and get out of, good solid performance. If that's what motorists really want—above anything else—they are going to get it in the 1949 Chrysler.

It is perhaps significant that in view of its earlier experience, the Chrysler models have "evolved" less slowly in some respects than the new models of its principal competitors.

After 1949, automobile stylists should have a better idea about where they stand than they did a year ago. There are other considerations, of course, but the 1949 automobile battle lines, at least as far as the major auto producers are concerned, appear to be drawn most sharply along the styling sector.

The question is sometimes asked, "Why don't American car manufacturers build good looking cars like the European cars?" It is just as easy to build good looking cars as the present models, the industry's critics say, so why don't the American car makers do so?

A reasonably complete answer to this question was given recently by L. C. Goad, GM vice-president and group executive of Fisher Body, Ternstedt and Buick-Oldsmobile-Pontiac assembly divisions, speaking before the Society of Automotive Engineers in Detroit.

Goad's answer can be summed up succintly: there are just too many fingers in an automotive pie!

For instance, as Goad points out, there are stringent limitations on one's freedom in developing automobile bodies of great beauty and design. All points of view—the car designers, the tool engineer, the ac-

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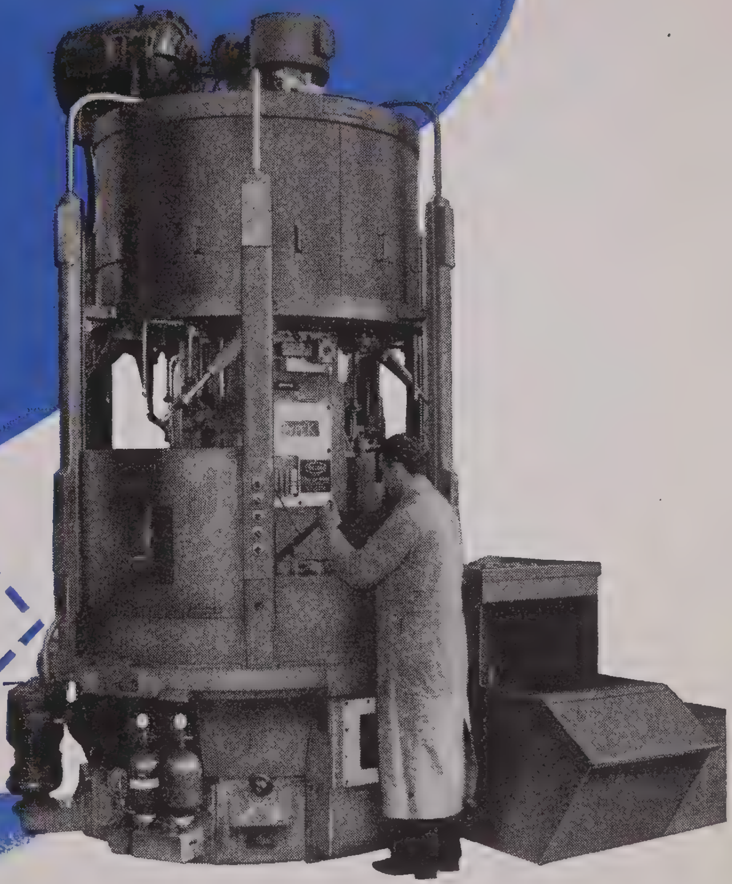

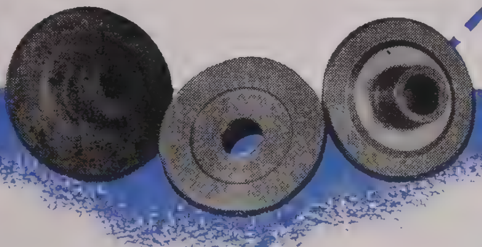

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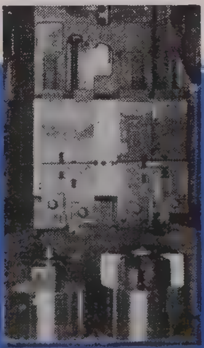

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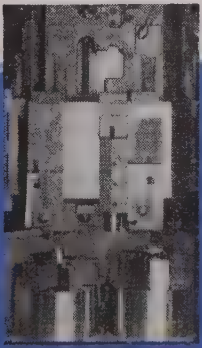

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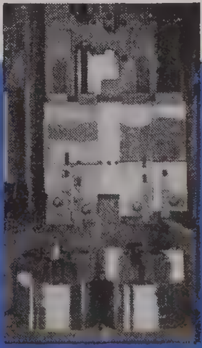

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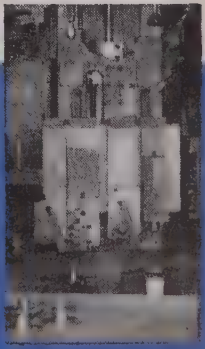

STATION 6

THE BULLARD COMPANY
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countant, the salesman and the proving ground must be reconciled before a new model goes into production. Modern cars, he says, are the result of team-work—not anyone individual's ideas of what the car should be and look like.

"The quarterback who keeps an eye on the goal, plots plays that unify all the forces of his team and drives it relentlessly to the goal—he is the master designer of tomorrow," according to Goad.

In GM's styling section, Goad asserts there is an extensive staff of draftsmen, engineers, sculptors, model builders and skilled draftsmen in wood, metal, paint, upholstery and other materials. These specialists regularly work with ideas far in the future. They follow trends closely. Periodically, they "pull their dreams down to earth" and build a model for each of the five GM passenger car divisions.

FROM the start, the GM stylists work with Fisher Body, Ternstedt and the individual car divisions. As the designs are carried forward from sketch to full scale clay and finally to full scale wood and metal, various GM specialists are called in. The body engineers have their opportunity to make recommendations. So do the tool designers, the cost accountants, the manufacturing people, the sales people, the purchasing department, the advertising people and the service people.

Meanwhile, according to Goad, extensive "experimental engineering work" is carried on. Costs are projected at every step in the development, even during these days of uncertain pricing. Eventually the tool engineers go to work—nearly 4000 in Fisher Body alone.

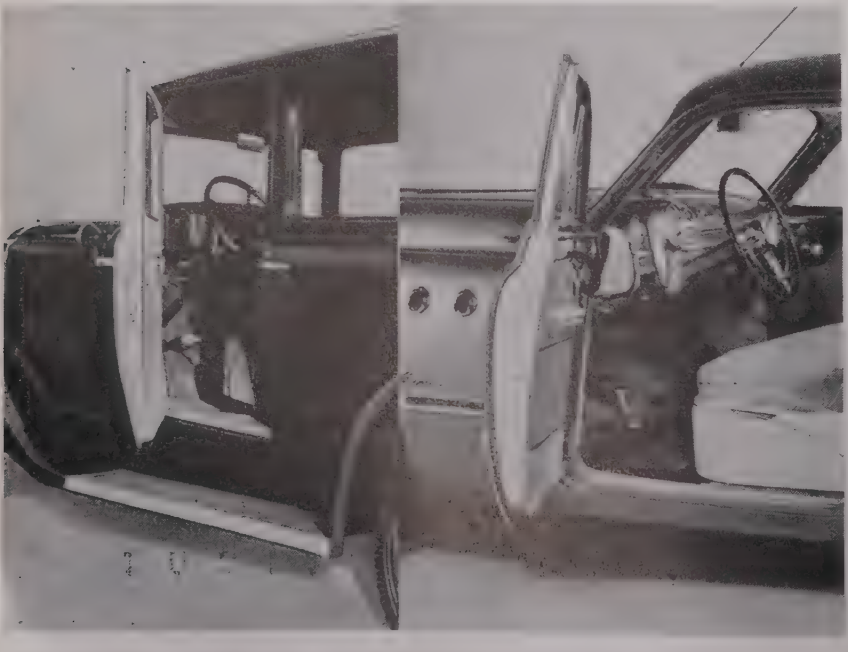
Near the end of the development stage, employes from branch plants are brought to Detroit for training in assembling the new models. Layout, equipment and facilities have to be planned months in advance, he points out. Traffic and materials handling must be scheduled to the last detail.

When all these activities have been planned, approved and coordinated, the new model is ready to go.

Thus, if one could convince a U. S. car designer that European cars are good looking—a debatable point—he would still have to sell the same idea to the top auto executives, tool engineers, the manufacturing experts, the purchasing department, the sales department, the advertising department and the service department.

And that is essentially why American mass-conceived and mass-produced cars seldom resemble—and are hardly likely to resemble — the individually-conceived and hand-built European models.

COMPARISON: *Here is a view of the "bulging Buick" of 1929, compared with the 1949 model. The term "bulging" came from the door profile.*



Last of the 1949 GM line of cars utilizing the "A" type Fisher body to be introduced is the new Pontiac.

THE new models are available in 10 body styles, including a convertible, a new all-metal commercial vehicle and two station wagons—one of all-steel construction and the other wood-and-steel. Earlier, Pontiac officials had predicted that the wood station wagon will soon be outmoded.

The new cars are available in two basic body styles—a so-called "fast back" Streamliner and the "notch-back" Chieftan. Both series have 120 in. wheelbase. In all models, the Silver Streak motif is accentuated.

Grille design has been simplified, utilizing a single chrome bar that spans the entire front above ten modernistic louvres. The stamped grille, is plated in Pontiac's own huge plating plant.

The new models feature roof lines 2.5 in. lower than the previous models, reduced pillars and curved windshields. As in other GM lines, the body contour is modern and rear fenders are absorbed only partially into the body. Both Pontiac lines have up to 38 pct more glass area. Seats, front and rear, and doors are noticeably wider than last year's cars.

A 90 hp six and a 104 hp eight are offered. The 6.5:1 compression ratio has not been boosted but a 7.5:1 high compression head is available on request.

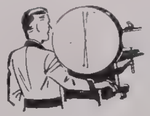
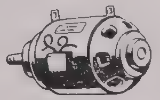
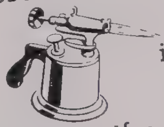
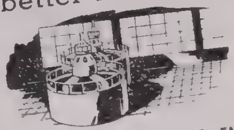
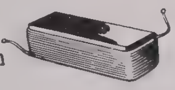
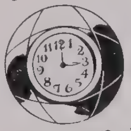
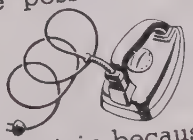
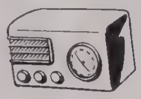
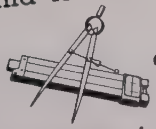
In the 1949 Pontiac, the starter button has been moved to the instrument panel. A pull-out hand brake is specified. A new outside air heating system is said to reduce fogging. The ignition switch is well lighted and speedometer mileage figures are magnified.

On the new Pontiacs, the hood and radiator have been lowered. The ignition coil is mounted atop the engine to reduce television interference. (This reduces the length of distributor wiring by 75 pct.)

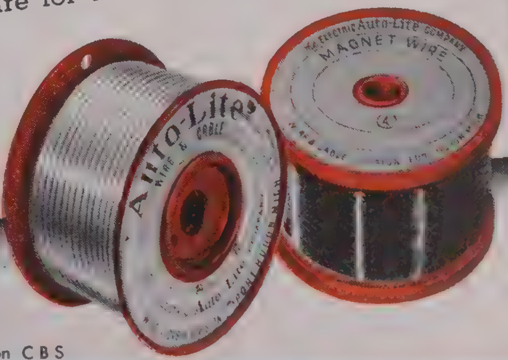
Hydra-Matic transmissions are available at extra cost. During the past year, more than 75 pct of new Pontiac owners specified automatic transmission, it is reported.

The new frame, a four-way cantilever type, is reported to give much greater rigidity and resistance to distortion.

The right wire for the right job!

Technological advances in many industries constantly require new developments  and new applications of wire and cable. A space-saving wire design has  made possible smaller, more compact motors. A new and better form of heat resistance  in turn prevents failure  in generators. Again, if a sharp turn  can be given a wire, a new and better  clock may be possible. New abrasion characteristics may mean milady's iron  won't fail. A city's safety is made more certain because a solenoid sets new records in performance. As simple a thing as better shielding in a wiring harness  can be the secret of clearer radio and television reception. Auto-Lite Engineers have had many years'  experience in answering such problems. For more complete information on the "right wire for the right job" write to

THE ELECTRIC AUTO-LITE COMPANY
Wire and Cable Division
Sarnia, Ontario • Port Huron, Michigan



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AUTO-LITE *Electrical* **WIRE and CABLE**

Washington . . .

EUGENE J. HARDY

• Voluntary allocations to be extended . . . Senators cool toward mandatory controls . . . Administration will be satisfied with voluntary controls . . . Legislators show keen interest in steel.

WASHINGTON — Congressional thinking on allocations continues to lean toward continuance of the existing voluntary agreements program now being used to parcel out steel to so-called key areas of the economy. In fact, there is no doubt that the voluntary allocations program embodied in Public Law 395 will be extended for at least 7 months, and perhaps longer. Hearings on extension legislation before the Senate and House Banking Committees, which have reported out the legislation, made it quite clear that a large block of legislators was satisfied with the way the voluntary program has been set up, the way it has been run, and the results obtained. It will be difficult to sell this group any legislation embodying mandatory controls on steel and other commodities.

Commerce Secretary Charles Sawyer asked the Committees for a 7-month interim extension of the voluntary program. While he feels that it is up to the White House and the Congress to decide what to do about it on a long term basis, he holds that the interim etxension is necessary to keep the existing programs from falling apart at the seams. It would not be too surprising if Congress decided to extend the voluntary set-up for a longer period than the interim 7 months, and then consider the control problem settled for the current session.

Mr. Sawyer also told the Committees that " a broader stabilization program . . . is expected to be submitted to the Congress soon. That program will include provisions for a longer term extension of the voluntary agreements authority as part of an overall approach to economic stabilization." It is generally assumed that this broader program will ask for mandatory allocations and price controls on a standby basis. However, some White House sources say that this will be designed to fulfill campaign pledges, and that, in view of the many soft spots showing up throughout the economy, President Truman will be satisfied with a long-term extension of the voluntary program. Some of the President's closest economic counselors feel that the present voluntary program will be more than enough to do the job and that it may not be needed at all after the end of this year.

Without the interim extension, at the very least, the hands of the Office of Industry Cooperation would be tied. It could not make any new agreements or start new programs after March 1. The OIC also would like to get on with preparations for other possible plans which have been proposed, some of which are even now under study.

THESE include possible ECA programs, "distressed" municipalities which need steel for health and welfare programs, and possible additional housing requirements, should a broad housing program be enacted, and perhaps new defense and national security needs.

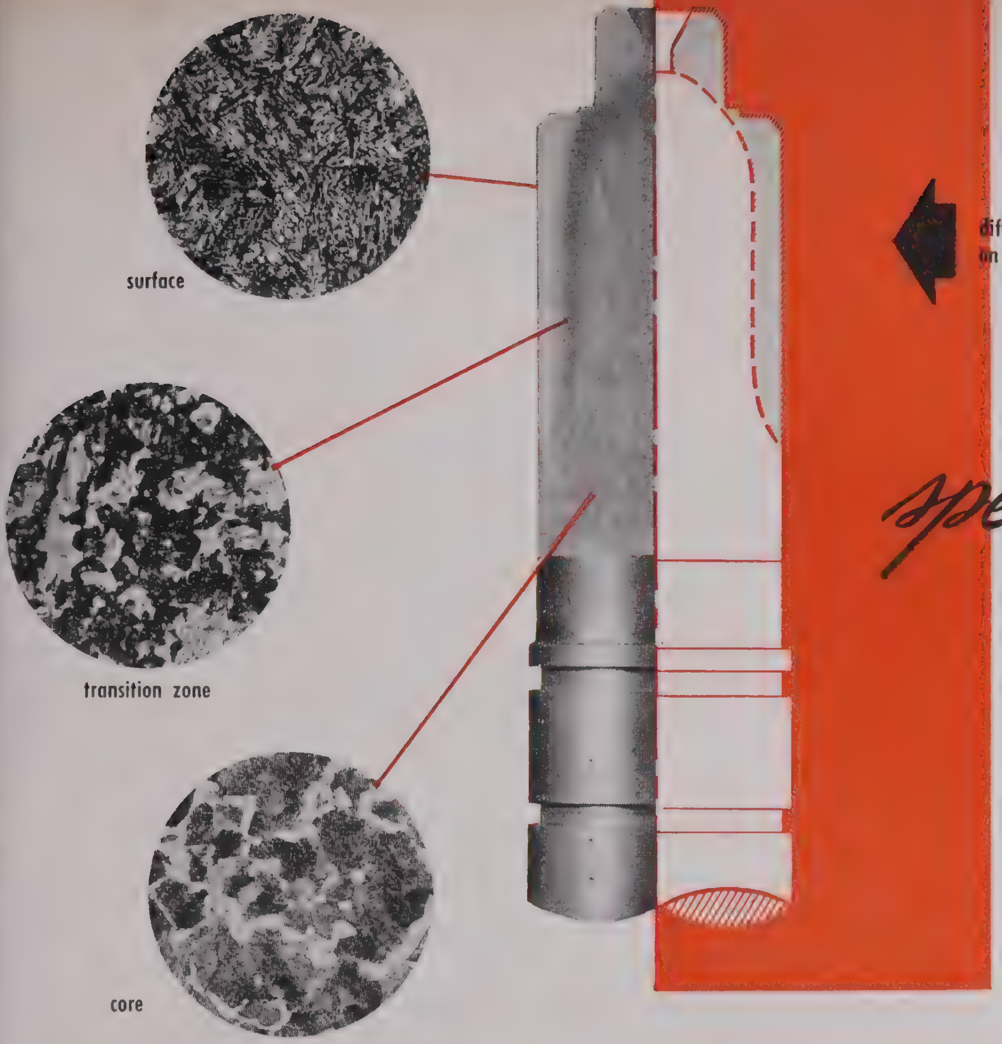
If the present authority were allowed to lapse on March 1 and then later extended, the OIC would then be thrown for a 60-day loss in getting under way again on new programs. Time factors, such as time for public hearings and the 60-day lead time normally needed by the steel industry between placing of orders and shipping, would bring the setback.

It is obvious that the subject of steel occupies the attention of Capitol Hill as never before. It is as if the real relation of steel to the nation's economy is being taken into consideration for the first time.

This is well illustrated by the Senate hearings. Not only was the subcommittee on deck itself but numerous senators, non-committee members, were there as well, presumably as observers. All had questions to ask.

Many of the inquiries were plainly posed for the purpose of obtaining background information. How is the allocations program set up? How are allocations determined? How is it working? To what extent is small business taking part? What is total steel capacity? Production? Needs?

The basis of Sawyer's support for continued voluntary allocations is the OIC's compilations which show that not only is small business getting a large portion of the busines under the program but that without it, some of the individual establishments might have had to close up shop. Furthermore, the figures show that crit-



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achieved by **flamatic** selective surface hardening

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Compare this drawing of a hardness pattern for a drive shaft (above right) with the etched section of the actual part (above left) after Flamatic precision hardening. It is dramatic visual proof that Flamatic selectively hardened this part to the toughest sort of specifications.

But more important: the two diameters (pilot and splined portion) were hardened **in one operation** at the rate of 200 shafts per hour. Standard flame heads are arranged to concentrate the desired amounts of heat in the right areas. Hardening each diameter separately wouldn't do, for the second operation would alter the pattern produced by the first. This shaft, length 9-1/16", pilot OD: 51/64", spline OD: 1½", SAE 4140 is one of fifty or more parts Flamatic-hardened by Rockford Clutch Division of Borg Warner Corp. Surfaces are heated to within plus or minus 5°F of preset values by exclusive electronic temperature control. Quick positive setups make small lot production convenient and economical. Adaptability to wide range of parts (gears up to 18" and shafts up to 30" long) makes Flamatic a profit-producing investment for scores of users. Write for informative booklet, Publication M-1658.

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THE CINCINNATI MILLING MACHINE CO.
Cincinnati 9, Ohio, U. S. A. •

ical industries to which the programs apply are getting sufficient steel to supply the critical needs by diverting only about 3 pct of production to these requirements.

THESE figures place steel production at a total of about 5,670,000 tons a month. Approximately 550,000 tons of this are currently under voluntary allocation programs, (THE IRON AGE, Dec. 30, 1949, p 75), which would be continued through August even if the law were not extended. Normally, these 16 manufacturing groups would have received about 368,000 tons of steel monthly under the historical quota pattern generally used for postwar distribution — leaving only 182,000 tons a month as actually being diverted through the programs.

As to future demand, production and needed capacity, in reply to direct subcommittee questioning Sawyer said information made available to OIC indicated 1949 steel production of 68 million tons. From the same information. it is estimated that domestic requirements or demand for the year would probably be around 71 million tons. Exports (including ECA shipments) were estimated at a little more than 4 million tons.

This adds up to a probable shortage of about 7,000,000 tons of steel in 1949.

As to increased capacity, Sawyer avoided taking a stand before the subcommittee in regard to the present controversy—although he implied that he is cool toward proposals which would force industry to expand faster or to have the government build steel mills.

It would take up to 3 years, he told querying senators, to build new facilities and to get them into full operation, not to mention the 3 million tons of current steel production which would have to be diverted from other uses in order to build an additional 10 million tons of capacity.

And while the probable steel shortage this year is now seen as about 7 million tons, he said, the industry is continuing to expand —and that no one could foretell how much actual demand there would be next year or the next.

The Commerce Secretary also endorsed faster write-offs for the industry if government-backed expansion moves were pushed beyond the industry's normal expansion plans.

Reject Copperweld Bid As "Unsuitable"; Will Negotiate Disposal

Washington

• • • **War Assets** Administration is ready to enter into direct negotiations for the disposal of the Copperweld steelmaking facilities which are owned by the government.

WAA will dicker either for the portions of the property owned outright by the government, valued at about $5 million, or it will make a package deal which includes another $5.4 million worth owned by Copperweld.

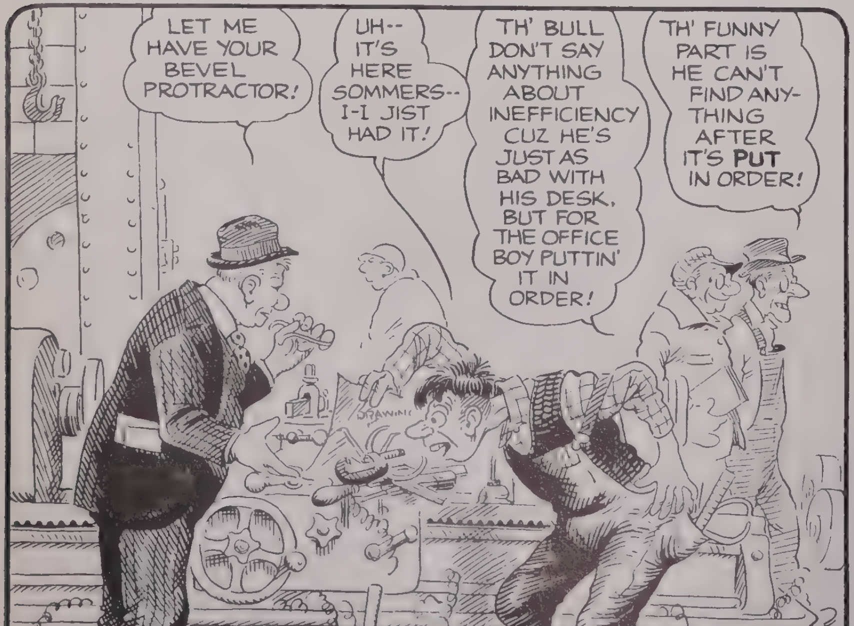
As a package deal, the property would include an alloy steel plant, an annealing plant, a pig iron and an ingot plant, and an ingot stripping plant plus the necessary Copperweld real estate. Original cost to the government was about $19 million.

Only one bid was received upon advertisement for bids. This was from Penn-Warren Steel Corp., Wilmington, Del., through its board chairman, R. Livingston Sullivan. This bid was for $10,400,000 for the package. It was contingent upon borrowing $5,400,000 from the Reconstruction Finance Corp. with which to pay off Copperweld for its share of the facilities. It proposed to pay off WAA in 10 equal installments of $500,000 annually with interest at 4 pct.

Although this offer equaled the WAA valuation, it was not considered suitable, officials said. No active negotiations are under way although Paul V. McNutt, former government figure, has already signified to WAA that he would make an offer if sealed bidding fell through. McNutt represents the Warren-Ohio Steel Corp. of which he is board chairman.

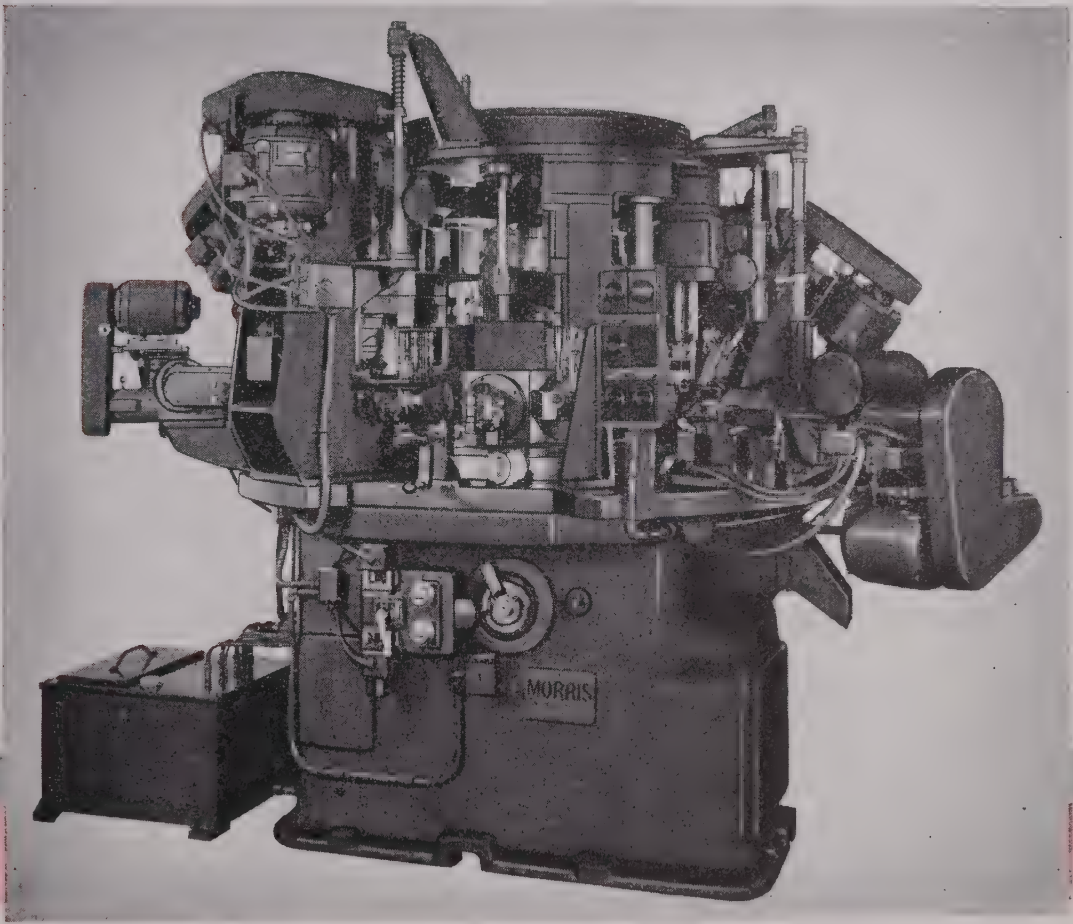
In a letter read at the bid opening on Jan. 21, Mr. McNutt said the time element prevented preparation of a bid but that his firm would negotiate for the purchase on WAA's own terms and conditions if the first bidding fell through. Several other firms are known to be interested in the facilities.

THE BULL OF THE WOODS BY J. R. WILLIAMS


LET ME HAVE YOUR BEVEL PROTRACTOR!
UH-- IT'S HERE SOMMERS-- I-I JIST HAD IT!
TH' BULL DON'T SAY ANYTHING ABOUT INEFFICIENCY CUZ HE'S JUST AS BAD WITH HIS DESK, BUT FOR THE OFFICE BOY PUTTIN' IT IN ORDER!
TH' FUNNY PART IS HE CAN'T FIND ANYTHING AFTER IT'S PUT IN ORDER!
DRAWING
TWO OF A KIND
2-4 J.R.WILLIAMS
COPR. 1949 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

Here's automatic production at its best-

MORRIS MOR-SPEED Production Machine



● On this machine the operator merely loads and unloads the work while machine is operating on the piece. All machine functions including the indexing are automatic.

The machine drills—taps—spot-faces—and reams carburetor main bodies on a mass production basis for a prominent automobile concern.

The machine of vertical design has 12 automatic indexing four position fixtures, 20 drilling spindles, 7 facing spindles, 15 tapping spindles, 1 brush spindle and 4 reaming spindles and turns out a completed piece at every index of the turret.

Here is another typical instance of where Morris developed the machine to meet specific job conditions. If you are interested in the high production of work requiring drilling, reaming, tapping, facing and similar operations consult Morris—they have the experience, engineering ability and facilities to help you.

Write for our Mor-Speed Production Machine Bulletin showing the wide scope of our operations with specialized equipment.

Builders of
MOR-SPEED
Line

The MORRIS Machine Tool Co.
CINCINNATI 3, OHIO

West Coast . . .

ROBERT T. REINHARDT

• Los Angeles industry hits plateau but looks for rise in spring . . . Columbia official strikes out at f.o.b. price system . . . Henry Kaiser tells auto dealers to fight Regulation W.

LOS ANGELES—Administration jitters; buyer bewilderment; and consumer caution are the ABC's accounting for the leopard skin "new look" of local industry.

Reluctance to invest in new ventures in steel, housing and heavy construction is evidenced in delayed plans pending outcome of the administration's tax program; buyers in the industrial field are confused and uncertain as to how far ahead it is wise to purchase in the face of what may be price declines; and consumers are holding on to larger portions of their take home pay either in the hope of lower prices or better quality merchandise.

Local manufacturers of stoves, kitchen cabinets, pots and pans and other consumer goods report cut-backs of from 20 pct to 40 pct over the same period last year, but in the same breath they will tell you business is still much better than anything prewar.

Some of those pipe lines so much discussed in recent years are rapidly filling and others are more than full with the valves in consumers' homes getting an occasional twist to the right. Naturally this has brought about a back-up at the inlet and some of the manufacturers who have been working night and day now find time to relax and look around.

Not that there is any cause for alarm nor is there need to drag out words such as "recession" and "depression," but hard-headed business men are taking the situation in stride and adjusting production schedules accordingly. There is no evidence of widespread layoffs, reduced payrolls and general curtailment. Instead there is the feeling that we are enjoying a "breather" or, as the construction men say, "taking five."

If steel supply and availability were the only criteria, business would appear to be booming. In general, steel is still hard to get. Specifically, certain structurals and bars are waiting for buyers while sheets are still often to be found moving at slightly above mill prices.

A stove company here last week advertised "Surplus Stock, from 11 to 30 gage. $60 per ton and up," but hungry sheet buyers were soon discouraged when they found the sheets to be only wasters and fall from shears.

While rumors were afloat that cold rolled light gage sheets were loose, both warehousemen and users failed to confirm this utopian state and sales managers of producers were willing to bet that any one of a dozen users would buy all they were offered.

Another wager is floating around among steel men, and the odds are good, that Kaiser Co., Inc., will reduce the average $30 per ton premium it is asking for its products within the next 60 days.

Consensus is that for the next three months business and industry in general will operate on a plateau and an increase in pace will be noted soon thereafter. However, it is conceded that those leopard's spots will still be evident and in specific instances some businesses are going to have to cut back to size and end their dreams of continued expansion with unlimited markets waiting for their products.

SEATTLE—Pulling no punches, F. B. DeLong, vice-president in charge of sales for Columbia Steel Co., last week lashed out against the ruling of the Supreme Court which brought about the elimination of the basing point method of pricing.

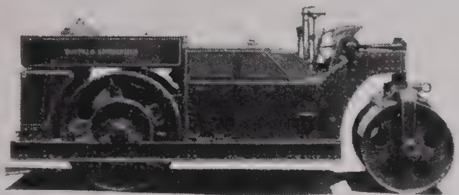
Speaking before the local Chamber of Commerce, the executive said: "What great reform is the decision supposed to accomplish? It surely does not tend to increase competition between steel producers. It surely *does* tend to create discrimination among some steel consumers at their present locations. By what logic are laws pertaining to fair competition so interpreted that a manufacturer may be forced to move his plant in order to gain the competitive position the very same laws are supposed to protect?"

Ridiculing the "new rules" which say that it is legal to receive different mill net returns on sales of the same product to different customers "when done in good faith to meet competition but such sales shall only be permitted in individual situations and cannot be done systematically," Mr. DeLong pointed out that such a procedure for U. S. Steel handling 3000 orders a day was "commercially impractical."

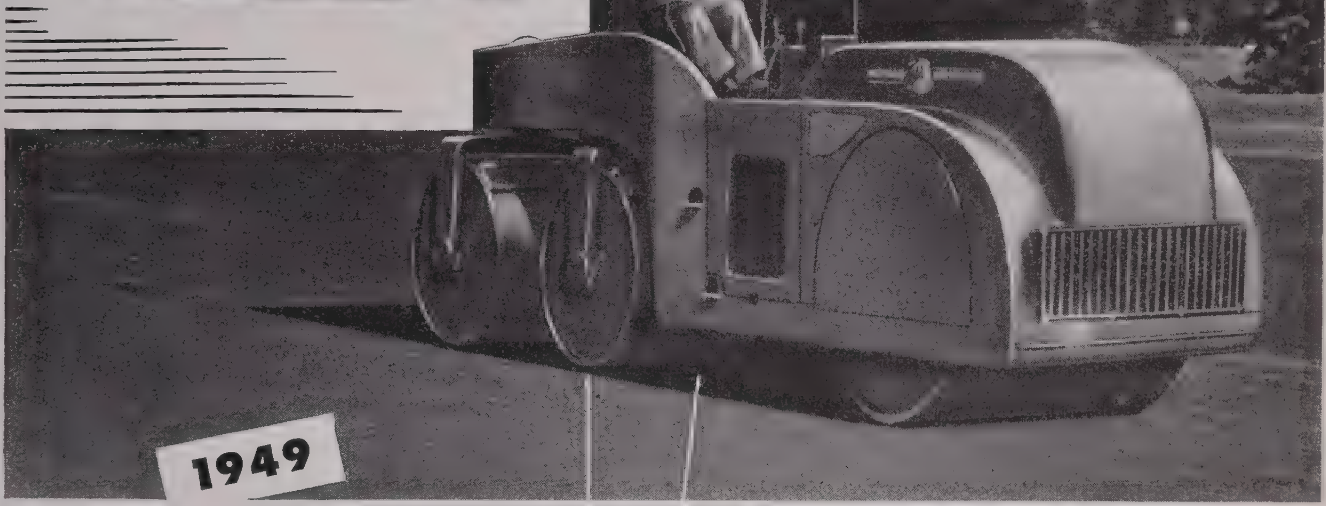
It was the contention of this executive that identical prices under the basing point method were the result of competition and not the method. He further argued that moving fabricating plants nearer sources of steel supply was not the cure-all some persons have indicated since many manufacturers must purchase from a number of mills to get all types of materials needed and that frequently it is more economic for a fabricator or other steel user to be closer to his market than to his source of raw materials.

In analyzing steel production in the West, Mr. DeLong stated that while, in 1947, western mills produced two and one-half million tons of finished steel products, approximately 30 pct of local production was exported. U. S. Steel, which was the largest producer in

1929



Buffalo-Springfield's Model VT-21—
Twin Disc equipped



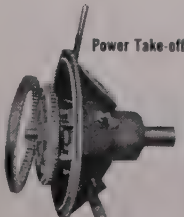
Buffalo-Springfield's Model KX-25—Twin Disc equipped

Twin Disc Keeps Them *Rolling*

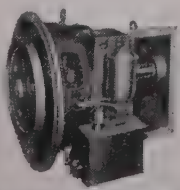
In February, 1929, The Buffalo-Springfield Roller Company introduced Model VT-21, a seven-ton tandem road roller. *This roller was equipped with Twin Disc Clutches.*

In February, 1949, Buffalo-Springfield is building Model KX-25, a 12-18 ton, three-axle tandem roller. *This roller also is equipped with Twin Disc Clutches.*

For more than 30 years, leading manufacturers of equipment for every industry have found Twin Disc Clutches and Hydraulic Drives the answer to power transmission problems. Twin Disc Clutch Company, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).



Power Take-off



Hydraulic Torque Converter

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U.S. PAT. OFF.

Machine Tool Clutch

Heavy Duty Clutch

Marine Gear

JUDGE TWIN DISC BY THE COMPANIES IT KEEPS

this area, exported less than 6 pct of the total sent out of the territory. Eastern mills sent about 2½ million tons of steel into the West in 1947.

Additional western ingot capacity and practical shutdown of shipbreaking on the Coast were cited as major factors in developing a scrap shortage during 1949, according to Mr. DeLong. He urged the business executives to do all in their power to get every available ton of scrap on its way to some steel plant.

Some local scrap buyers believe that this plea for more scrap so far as the local market is concerned comes a little late. Four months ago inventories were low, but now the market shows signs of softening in spite of a "hard" winter and dealers are offering good quantities of satisfactory material. However, for the long pull, there is little reason to believe the supply picture can be viewed with complete complacency.

Kaiser Urges a Fight Against Regulation W

San Francisco

• • • **Henry J. Kaiser,** this time in the role of automobile tycoon, urged members of the National Automobile Dealers Assn. in national conference here last week to carry on the fight against Regulation "W" with increased vigor, charging that the Federal Reserve Board's limit on time payments "favors persons and corporations having ample credit and the little man is checked from growing."

Dangling the potential market for automobiles before the dealers, Mr. Kaiser reported: "Just think of the untouched markets: 14 million cars in the United States are more than 10 years old and normally would have been in junkyards before this. In fact, 2 million ghost cars are 15 years or more old. The channels of production, good salesmanship and credit must be kept vigorous to supply 15,400,000 Americans, who, according to one survey, will be in the market for autos by the end of 1950."

The chairman of the board of Kaiser-Frazer Corp. recommended a six-point program to bring about modification of Regulation W: write public officials in protest; inform civic organizations and urge passage of resolutions; get similar cooperation from customers; get support of auto manufacturers; get cooperation of press; and support present questionnaire survey now being conducted among members of the National Automobile Dealers Assn.

Mr. Kaiser stated that only 14 pct of American families are earning enough to afford $100 per month installments and hence are being "denied the right to buy cars of their choice—a privilege that, at this moment, is reserved for the rich and well-to-do." He further pointed out that persons who use autos for their work or business are "discriminated against" by Regulation W since the Automobile Mfrs. Assn. reports that 55 pct of all automobile mileage exclusive of trucks is driven for business purposes.

Faces Power Shortage

Spokane, Wash.

• • • **Power reduction** of 17 pct at the Mead aluminum reduction plant and the Trentwood aluminum rolling mill of The Permanente Metals Corp. because of the general shortage in the Pacific Northwest, has brought about the layoff of 255 men at the latter plant and threatens to delay operations of the company's foil mill in California and rod mill at Newark, Ohio.

Interruptible power amounting to 32,800 kw has been cut off from the Mead plant by Bonneville Power Administration and even a temporary supply from British Columbia and steam power plants has been eliminated by the heavy demand.

Power authorities generally believe the critical situation will last for at least several more weeks and possibly months, depending upon how soon the weather warms up enough to melt the ice-bound rivers.

Fire Razes Metal Works

Seattle

• • • **Puget Sound Sheet Metal** Works was razed by a half-million dollar fire last week when a watchman's electric heater became overloaded.

Production in the plant was brought to a stop with some work being continued in another building across the street from the gutted plant. Harry S. Bowen, president of the company, stated that the loss was completely covered by insurance and that rebuilding will start at once. Manufacturing space will be leased where possible to carry on work.

Puget Sound has been manufacturing sheet metal products for the Hanford atomic project and all key employees, including mechanics, will be kept on the payroll until they can be put back on the job, according to Mr. Bowen.

The plant was valued at $800,000 and contained more than $200,000 worth of power shears, machine presses and automatic welders, some of which will be salvaged.

Starts Work on Bridge

Seattle

• • • **First steel** on the $14 million Tacoma Narrows Bridge south of here was raised last week, with nearly 100 tons being in place at the end of the first day. The steel raised will become part of the lower portion of the towers on which the suspended structure will hang. Piers—all that remain of the original bridge which collapsed in a high wind in 1940—have been recapped for the new towers.

New towers will be 58 ft higher than the original ones which stood 425 feet above the piers. As soon as the towers are completed, the cable spinning machines will be assembled and spinning of the cables started.

Four lanes of traffic will be provided on the new structure instead of the two on the old bridge. Deck of the bridge is a conventional open truss 33 ft deep. The bridge that failed had a girder deck.

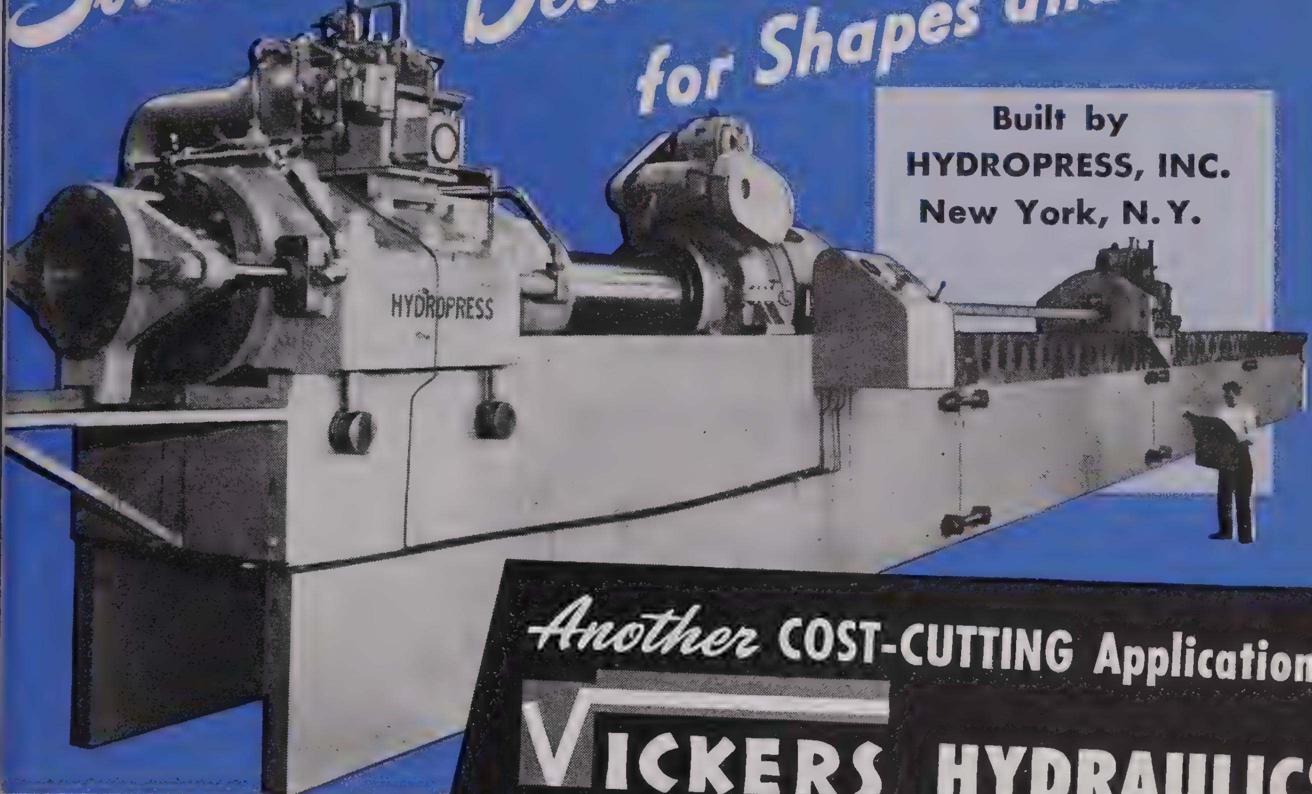
Organizes Subsidiary

Spokane

• • • **Seattle Steel Co.** has organized the Empire Steel Co. as a subsidiary to build and operate a 30,000 sq ft steel warehouse here, it has been announced by R. M. Bialkowsky, local representative.

Construction is to start in March and General Machinery Co. of Spokane will fabricate the steel for the new building which is scheduled for completion in June. Cost is estimated at $200,000.

Stretch-Straightening-Detwisting Machine for Shapes and Sections



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HYDROPRESS, INC.
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Powered by Vickers Hydraulic Power Units and controlled by Vickers Hydraulic Valves, this huge machine performs detwisting and straightening operations on structural members as long as 40 feet and with cross-section lying within a 14 inch diameter circle. The stretch-straightening and detwisting operations are performed simultaneously so that torsion is applied while the section is under tension and ready to flow. The torsional and tensional stresses are sufficient to obtain immediate flow and permanent detwisting of the material with a minimum of spring back that would occur to a great extent if torsion were applied alone.

An important feature of the machine is the arrangement of movable heads that makes it possible to detwist any part of the member if localized detwisting is necessary.

This is another of the innumerable jobs throughout industry that is being done better, faster and at less cost with the help of Vickers Hydraulic Controls. Consult the Vickers office near you for information on how Vickers Hydraulic Equipment can improve your machinery.

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A compact hydraulic power package that simplifies hydraulic system design and reduces costs. Available with various pump combinations to meet wide range of requirements up to pressure demands of 2000 psi. There are 92 standard sizes and types of single stage, two stage and dual pressure pumps equipped with motors from ¾ to 20 hp. Ask for Bulletin 46-43.

PERSONALS

HARVEY C. HOPKINS, vice-president, American Can Co.

• **Harvey C. Hopkins,** general manager of purchases since 1944 for American Can Co., New York, has been named vice-president in charge of purchasing and traffic, succeeding Albert R. Pfeltz, who died. Mr. Hopkins joined the company in 1925 as a research chemist at Maywood, Ill. He was later transferred to the manufacturing department in Chicago and in 1930 became assistant supervisor of the enameling and decorating division for the central division, later holding the same post in the Atlantic division. He was made assistant manager of the enameling and decorating division for the entire company in 1936, and manager the following year.

• **Fred H. Ruff** has resigned as secretary and treasurer of Jessop Steel Co., Washington, Pa., and has been appointed controller of the new steel plant of Compania de Acero del Pacifico at Concepcion, Chile.

• **Walter S. Gifford** has been elected a director of the U. S. Steel Corp., Pittsburgh, and a member of the Finance Committee.

• **W. R. Cunnick** has been appointed vice-president and general manager of sales, Great Lakes Steel Corp., Detroit. Mr. Cunnick had formerly served as assistant vice-president and assistant general manager in charge of sales for Weirton Steel Co.,

° ° °

• **William T. Ong** has been named assistant to the president, American Steel & Wire Co., Cleveland. Mr. Ong has directed the company's public relations department since its organization in 1937 and the Ohio-Michigan district public relations activity of other U. S. Steel subsidiaries as well. Prior to 1937, he was associated with Dow-Jones & Co.

• **Lamar J. Otis** has been appointed general accountant of the Pittsburgh Steel Co., Pittsburgh. Mr. Otis had formerly been associated with Liggett Spring & Axle Co. **Donald J. Shaughnessy** has been named works accountant of the Monessen plant of Pittsburgh Steel.

• **Clarence R. Studer** has been appointed district sales engineer and placed in charge of the St. Louis office of Chain Belt Co., Milwaukee. **David B. Hill** has been made district manager of the new Jacksonville, Fla., office of the company.

• **Paul V. Dimmick** has been appointed central division sales manager of the American Coach & Body Co., Cleveland, succeeding **Deming Bronson,** who has resigned. **Arthur C. Frank** has been named to assist Mr. Dimmick.

• **Harry L. Aufderheid** has been appointed an assistant traffic manager and **E. J. O'Connell,** general traffic supervisor of U. S. Steel Corp. subsidiaries in the Pittsburgh district. Mr. Aufderheid joined Carnegie Steel Co. in 1920. Advancing through various positions in the consolidated traffic department of the corporation's subsidiaries, Pittsburgh district, he was named general supervisor in 1948, the position he held at the time of his present appointment. Mr. O'Connell joined Carnegie in 1926 and was named supervisor of transportation for U. S. Steel subsidiaries, Pittsburgh district, in 1944.

• **Edward E. Ford** has been elected a director of International Business Machines Corp., New York.

E. L O'MEARA, JR., assistant chief engineer, Harbison-Walker Refractories Co.

• **E. L. O'Meara, Jr.,** has been appointed assistant chief engineer, Harbison-Walker Refractories Co., Pittsburgh. Mr. O'Meara has been associated with Harbison-Walker for more than 20 years.

• **Harry T. Silverman** has been promoted from assistant superintendent of shops to superintendent of mechanical maintenance, hot and cold strip mills, Midland Works, Crucible Steel Co. of America, Pittsburgh. **Fred High,** formerly superintendent of merchant mills, has been made superintendent of roll shops, and his former assistant, **E. M. D. Herold,** succeeds Mr. High as superintendent of merchant mills. **Paul McGovern** has been named assistant superintendent of merchant mills.

• **D. R. Staples** has been appointed manager, Diesel Locomotive Engineering Dept., Baldwin Locomotive Works, Philadelphia. **Ralph A. Miller** has been named section manager, electrical section, of the same department.

• **Kenneth H. Kingdon** has been appointed assistant director of the research laboratory of the General Electric Co., Schenectady, N. Y. For the past two years, Dr. Kingdon has headed the Knolls Atomic Power Laboratory, which G.E. is operating for the Atomic Energy Commission. He continues in charge of this operation. Dr. Kingdon joined the G-E research laboratory in 1920.

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MORRIS H. WRIGHT, vice-president, Weatherhead Co.

• **Morris H. Wright** has been elected vice-president in charge of finance for the Weatherhead Co., Cleveland and, in addition, continues to serve as treasurer. Mr. Wright joined the company in 1944 as comptroller and later was made executive assistant to the president. He also serves as a director.

• **A. C. Childs** has been made assistant vice-president, Weirton Steel Co., Weirton, W. Va. Mr. Childs had formerly been district sales manager in New York. **Robert B. Sanders** has been appointed district sales manager in New York, succeeding Mr. Childs. Mr. Sanders had formerly served as district sales manager in Philadelphia. **James N. Talbott** succeeds Mr. Sanders in Philadelphia.

• **Harold S. Swanson** has been named general manager, Chas. Williams & Associates, Ltd., New York. He had formerly been connected with U. S. Steel Export Corp. The duties formerly performed by Mr. Swanson have been taken over by **Paul Livore**, formerly associated with Republic Steel Corp.

• **Harry E. Friedman** has been appointed general manager of the Carson Steel Co., Carnegie, Pa. Mr. Friedman had formerly been affiliated with the Westinghouse Electric & Mfg. Co., Lima, Ohio.

• **E. A. Brugger** has been made vice-president in charge of production of the Koehring Co., Milwaukee. Mr. Brugger, who has had 32 years of service with Koehring, for the past 10 years has served as general manager of the Parsons Co., a subsidiary, located in Newton, Iowa. **E. O. Martinson** has been transferred as chief engineer to Koehring from the C. S. Johnson Co., Champaign, Ill., another subsidiary, where he had been general manager. Mr. Martinson spent several years on the Grand Coulee Dam project, the TVA, and as chief engineer in the industrial ventilating equipment division of the American Machine & Metals Co. before joining the Johnson Co. **E. W. Maas,** a 31-year Koehring veteran and works manager since 1946, has been appointed vice-president and general manager of the Kwik-Mix Co., another subsidiary, at Port Washington, Wis.

• **A. Paul Thompson** has been named director of research of Eagle-Picher Co., Cincinnati, with headquarters in Joplin, Mo. Dr. Thompson had formerly been associated with the Mellon Institute of Industrial Research.

• **Lawrence R. Berkey, Jacob Kromberg** and **Max Sherover** have been elected to the board of directors of Illinois Zinc Co., Chicago.

• **R. W. Simpson** has been appointed vice-president and general sales manager of John Wood Mfg. Co., Inc., Conshohocken, Pa.

• **R. H. Oakley** has been appointed assistant general credit manager of the Glidden Co., Cleveland. Mr. Oakley joined the accounting department in 1937. In 1946 he was made Pacific Coast auditor for the company.

• **Kenneth Youel,** who has been in charge of press and radio relations for the General Motors Corp. in New York, is moving to the corporation's operating headquarters in Detroit to become director of press and radio relations for the G.M. Dept. of Public Relations. Effective Feb. 1, **Anthony G. DeLorenzo,** for three years public relations representative at the Buick Motor division, joined the G.M. Dept. of Public Relations in the Detroit office.

• **Philip N. Ross** has been appointed assistant director of research, **E. L. Kuno,** assistant to the division manager, and **L. C. Mechling, Jr.,** works engineer of the new Atomic Power Div., Westinghouse Electric Corp., Pittsburgh. Mr. Ross joined the firm in 1939 and since 1946 has been assistant to the director of the Power Pile Div. at the Oak Ridge National Laboratories. Mr. Kuno joined Westinghouse in 1925 and in his latest assignment for the company served as advisory production supervisor with Industria Electrica de Mexico for the Westinghouse International Co. Mr. Mechling joined the corporation in 1941 and formerly served as chief design engineer of the construction department in Pittsburgh.

• **Herman A. Poitras,** formerly superintendent of the Terre Haute, Ind., plant of Chas. Pfizer & Co., Inc., has been named general production manager and **D. C. McClain** has been appointed director of engineering of all Pfizer plants. **B. J. Quinn** has been appointed superintendent at Terre Haute and **E. J. Massaglia,** assistant superintendent. **H. L. Denzler** has been made superintendent of the company's main plant at Brooklyn, and **A. J. Greene** and **E. H. Eppig** were promoted to assistant superintendents. **W. R. Townsend** has been appointed head of the engineering department.

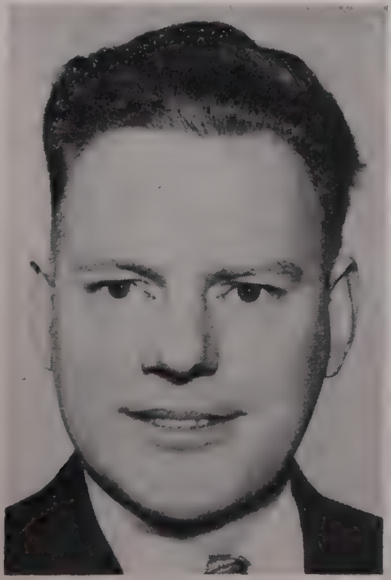
HERMAN A. POITRAS, general production manager, Chas. Pfizer & Co., Inc.

• **H. M. Hooker** has resigned as chairman of the board of Hooker Electrochemical Co., New York. He continues on the board of directors. **R. L. Murray,** formerly vice-president in charge of research and development, has become executive vice-president. **R. W. Hooker,** formerly vice-president and sales manager, has become vice-president in charge of sales. **J. H. Babcock,** formerly manager of research and development, has become director of research and development. **R. E. Wilkin,** formerly eastern sales manager, becomes general sales manager, responsible for all sales activities on the West Coast as well as in the East.

• **Floyd V. Snodgrass** has been appointed general manager of the Oakland, Calif., plant of the Nordstrom Valve Div., Rockwell Mfg. Co., Pittsburgh. Mr. Snodgrass started with the company in 1935, and previous to his new appointment had served as plant manager and assistant general manager.

• **George B. Parker** has been appointed assistant sales organization counsel for the U. S. Steel Corp. of Delaware. Mr. Parker comes to the Delaware corporation from U. S. Steel Supply Co., Chicago, where he had been general staff manager of the company's sales department. He joined the Supply company in 1936 as a clerk in the Boston office.

GEORGE B. PARKER, assistant sales organization counsel, U. S. Steel Corp of Delaware.



• **Joseph Kildare** has been elected vice-president in charge of sales and **Frank W. Miller,** vice-president in charge of manufacturing, Yarnall-Waring Co., Philadelphia. Mr. Kildare had formerly served as sales manager and Mr. Miller as works manager. **Carl Liberg,** formerly associated with the company's New York sales office, is now located at the new district office in Buffalo, and **C. V. Peterson** has been appointed sales representative in the Cleveland district.

• **J. K. Louden** has been elected vice-president and assistant to the president; **J. G. Bergdoll,** vice-president and works manager, and **J. C. Consley,** vice-president and chief engineer, the York Corp., Pa. **William F. Lynne** has been made assistant secretary and assistant controller of the company. **J. F. Witman** has been appointed assistant secretary. Mr. Louden came to the York Corp. about six months ago as assistant to the president. Mr. Bergdoll has been with the firm and its predecessors for more than 28 years, in the last five of which he served as works manager. Mr. Consley has been with York for more than 24 years and for the past five years has been in charge of the engineering division.

• **Heinz Heinemann** has joined the staff of Houdry Process Corp., Philadelphia, as a project director. Dr. Heinemann, whose headquarters are at the Houdry Laboratories near Marcus Hook, Pa., joined Houdry after serving as research chemist and research supervisor with Attapulgus Clay Co.

• **Howard L. Franks** has been made director of sales for Merrill Bros., Maspeth, N. Y. Mr. Franks formerly served as sales manager of the Charles Fischer Spring Co. and prior to this connection was with the Carpenter Steel Co. in a sales executive capacity.

• **William E. Gahl** has been appointed chief engineer of Templeton, Kenly & Co., Chicago, succeeding **F. J. Jakoubek,** who has resigned to enter his own business. Mr. Gahl joined the company in 1929.

C. O. RICHARDS, general sales manager, Standard Products Co.

• **C. O. Richards** has been appointed general sales manager over all divisions of the Standard Products Co., Cleveland. Mr. Richards joined Standard Products in 1946 as executive sales engineer and later served as general manager of the company's Reid Div., from which he was promoted to the general sales manager's position. Mr. Richards has his headquarters in the Detroit sales office.

• **Laurence I. Wood** has been named assistant general counsel for the General Electric Co. in New York. Mr. Wood has been a member of the legal staff of G.E. since 1945. He had been associated with the company's appliance and merchandise department in Bridgeport before becoming assistant to the general counsel for the company in New York in 1946.

• **Otis T. Hamby** has been named general works manager of the new Nine-Mile Press Plant of the Dodge division of the Chrysler Corp., Detroit. Mr. Hamby has been with Dodge since 1920.

• **Joe Stoneking** has been appointed advertising and sales promotional manager of the General Box Co., Chicago. Mr. Stoneking has a background consisting of 16 years in the industrial and sales promotional fields.

R. M. HUSSEY (left), assistant manager of construction, and H. H. MORGAN (right), assistant roll engineer, Jones & Laughlin Steel Corp.

• **R. M. Hussey,** formerly superintendent of the rod and wire department of the Aliquippa Works, Jones & Laughlin Steel Corp., Pittsburgh, has been appointed assistant manager of construction. Mr. Hussey has been with the corporation since 1915. **N. A. Hansen,** formerly assistant superintendent of the rod and wire department at Aliquippa, has been appointed superintendent of that department, succeeding Mr. Hussey. He joined J&L in 1926. **F. D. Wilkins,** general foreman of that department, has been made assistant superintendent, succeeding Mr. Hansen. Mr. Wilkins joined the Aliquippa Works in 1927. **F. A. Campbell** has been named superintendent of field construction. Mr. Campbell served as construction engineer and superintendent of construction, Aliquippa Works, from 1925 until he was appointed liaison engineer last year. **H. H. Morgan,** formerly roll designer, has been appointed assistant roll engineer. Mr. Morgan has been with J&L since 1945. He came to the corporation from the Iron & Steel Div., Kaiser Co., Inc.

• **W. C. Lyon** has been named to head the patent department of Cutler-Hammer, Inc., Milwaukee, succeeding **F. H. Hubbard.** Mr. Hubbard, who has been with the company since 1907, continues to serve in an advisory capacity.

• **J. R. Dedrick** has been appointed section head of the advanced development group at the metallurgical research laboratories of Sylvania Electric Products, Inc., at Bayside, N. Y. Dr. Dedrick had formerly served as associate professor of powder metallurgy at the University of Cincinnati.

• **Warren W. Matlack** has been named industrial manager of the New York branch of Brown Instruments division of Minneapolis-Honeywell Regulator Co., succeeding **O. B. Wilson,** now regional sales manager for the east, central and southeast. Mr. Matlack has been with the Brown Co. 18 years and has most recently been the company's district manager at Albany. **Devon W. Fryback** has been named to succeed Mr. Matlack in Albany. Mr. Fryback, who has been industrial manager at Hartford, has been with the company 21 years. **D. Lyle Russell** has been made industrial manager at Hartford, succeeding Mr. Fryback. Mr. Russell has been transferred from the Boston office. **Herman Hoyler** has been named industrial manager of the East Orange, N. J., district office of the company. Mr. Hoyler has been with Brown for 11 years.

• **Fehl J. Shirley** has been named assistant manager of the Titanium division of National Lead Co., with his headquarters in St. Louis. Mr. Shirley joined the St. Louis branch steel package plant in 1916 and in 1943 became company production manager and in 1948 manager of industrial relations.

OBITUARY...

• **Charles Knupfer,** 71, retired senior vice-president of the Carborundum Co., Niagara Falls, N. Y., died recently.

• **Harry L. Burkhardt,** 57, chief engineer, Andover Motors Co., Elmira, N. J., died Jan. 17.

• **Seeley F. Pratt,** 55, president, Union Steel Chest Corp., LeRoy, N. Y., died recently.

• **Walter T. Gillespie,** 62, chief engineer, Standard Stoker Co., Erie, Pa., died Jan. 16.

• **Richmond Seabury,** 60, Boston representative of metal goods manufacturers, died Jan. 6.

• **Charles Bailey,** 54, New York sales manager of Phosphor Bronze Corp., Philadelphia, died Jan. 18.

• **George J. Mead,** 58, vice-president of United Aircraft Corp., when he resigned in 1939, and co-founder of Pratt & Whitney Aircraft Corp., West Hartford, Conn., died Jan. 20.

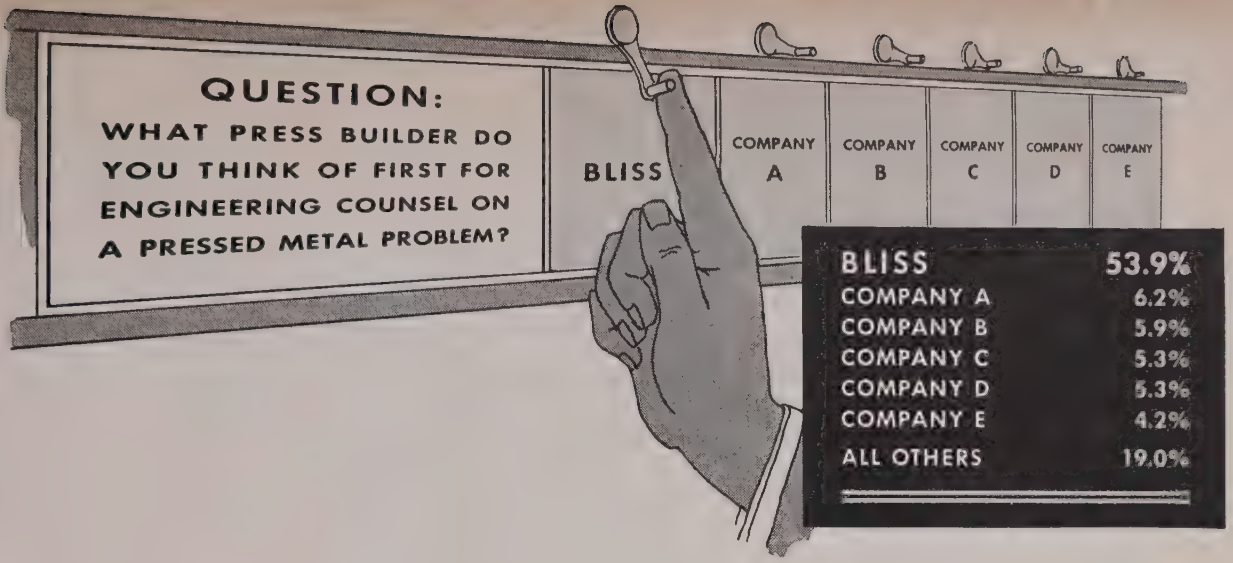
• **William F. Donnelly,** 59, construction engineer, Consolidated Western Steel Corp., died Jan. 19.

• **Frank C. Jones,** 62, president and general manager of the Okonite Co., Passaic, N. J., died Jan. 20.

• **A. M. Anderson,** 62, retired chairman of the board and president, The Sisalkraft Co., Chicago, died Jan. 6.

• **Harry G. Leighton,** retired manager, Philadelphia office, Brown & Sharpe Mfg. Co., died Jan. 18.

• **Howard J. Mandernach,** 49, manager, New York district, General Electric electronics department, died recently.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WHAT PRESS BUILDER DO YOU THINK OF FIRST FOR ENGINEERING COUNSEL ON A PRESSED METAL PROBLEM?
BLISS
COMPANY A
COMPANY B
COMPANY C
COMPANY D
COMPANY E

BLISS	53.9%
COMPANY A	6.2%
COMPANY B	5.9%
COMPANY C	5.3%
COMPANY D	5.3%
COMPANY E	4.2%
ALL OTHERS	19.0%

How press users voted on this vital question

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European Letter . . .

• Communists put to test in administering China's affairs . . . Loose and formless Chinese state provides some protection against complete monopoly of power . . . Impact on world affairs probably not too great.

LONDON—Chiang Kai-shek's third withdrawal from the leadership of the Chinese state is an event in the Chinese political scene comparable to the removal of a queen in a game of chess. The other pieces are left in a very forlorn and unhappy condition, even though they may be quite well placed to continue the game and checkmate may not be imminent. At this point the losing player has to make up his mind whether the game is so hopeless that he should resign at once, or whether he should go on in the hope that his opponent may make some mistake which will enable him to avoid complete defeat. In China, Chiang's successor in the presidency, the former Vice-President, General Li Tsung-jen, and his political friends have to estimate what strength remains to them, whether for bargaining about peace terms in the immediate future or for maintaining subsequently any compromise solution which may be reached.

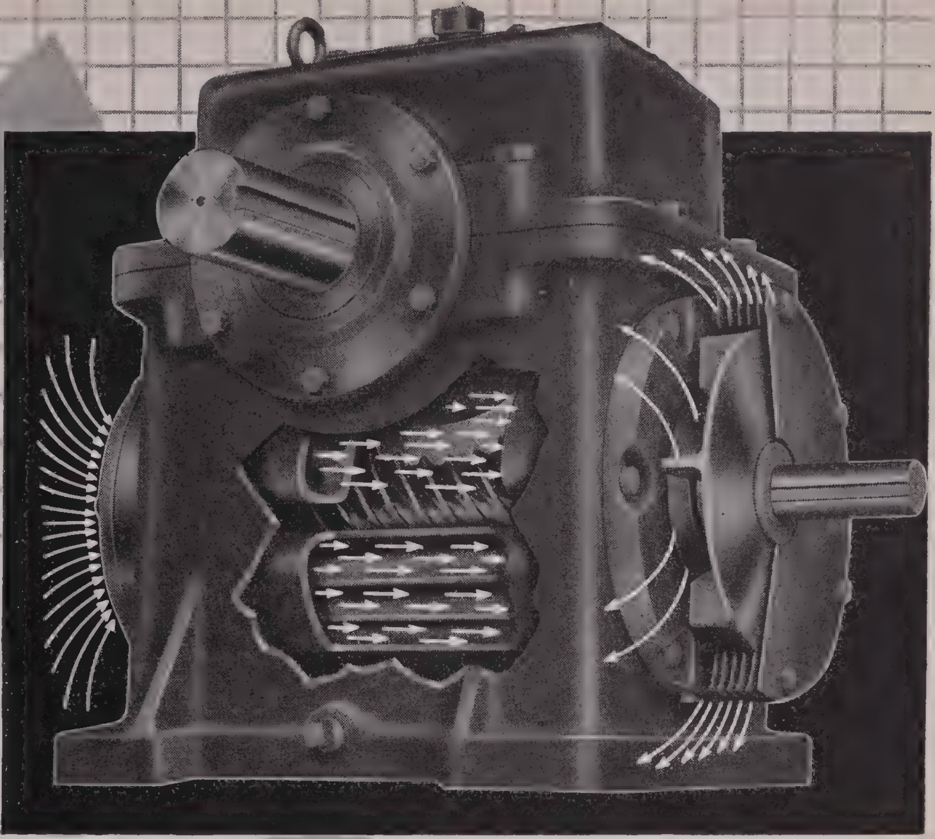
What is left from the disaster which has overtaken Chiang Kai-shek's regime? There seems to be no doubt that defeat has brought about the fall of the previously dominant clique of the Koumintang, and particularly of the four families on which the Communists have concentrated their political attack. —Chiang, Soong, Kung and Chen. With Chiang has gone Dr. T. V. Soong, his brother-in-law, who has been for some time Governor of Kwangtung province. In Soong's place General Hsueh Yueh, who defended Changsha against the Japanese during the war, has been made Governor, and the military command in Kwangtung has been given to General Yu Han-mou; these appointments mean that Canton is in the hands of its native sons. The two other leading personalities who remain to the ex-Nanking regime both belong to the Kwangsi group, closely associated with the Cantonese; they are Li Tsung-jen himself, who for the time being retains the office of President of the Republic, and General Pai Chung-hsi, who holds the military command on the middle Yangtse.

IT appears that it has been largely the combination of Li and Pai which has forced Chiang out of power. Li was elected vice-president against Chiang's opposition and there has been no love lost between them since. The new leadership on the military side of the Kuomintang is in effect the old "South-west" faction which was a thorn in Chiang's side in the years before the Japanese war; its re-emergence is a manifestation of the regionalism which it was the aim of Chiang's rule to supersede. But this regionalism is not merely a symptom of disintegration; it is an important factor in Chinese politics, which for the last three years has been working in favor of the Communists and against Chiang in Manchuria and North China, but may now work from the opposite direction against the Communists who are seeking to unify China from the north.

Reprinted from the London Economist by special permission.—Ed.

The question of the unification of China is quite distinct from the issue between Right and Left. China is a vast country with what is still an extremely inadequate system of communications, and in spite of the linguistic and cultural unity of the Chinese people—the most numerous aggregate of human beings who can be reckoned as a single nation—there are strongly marked regional differences and traditions of provincial autonomy. China was unified under the old monarchy, but administration was very loose—so loose that it was hardly possible for China to function internationally as one sovereign state. Since the revolution of 1911 there has been continual conflict between any attempts, by whatever faction, to establish an effective central government and the centrifugal tendencies of the provinces. Chinese nationalist sentiment all over China forbids formal separatism; but in practice most Chinese still think politically in provincial, rather than in national, terms. Chiang Kai-shek set himself the task of unifying China under a strong central rule, and went far toward achieving it; but the Japanese invasion tore away wide territories from the authority of the central government, and since the war it has been regionalism almost as much as Communism which has frustrated Chiang's efforts.

IN retrospect it now appears that, had Chiang been willing at the outset to abandon Manchuria to the Communists, he might have succeeded in consolidating his military control in North China. But he was determined to reunite by force the whole of China up to the Amur, and undertook this task with armies of troops already weary from years of warfare against Japan and with an economy already bursting with inflation, which the burden of large-scale civil war inevitably made worse. Even if he had been able to win peasant support by a progressive agrarian policy, Chiang's task would probably have been too great in the circumstances



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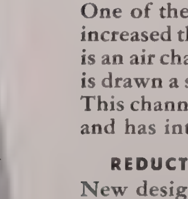

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Bulletin HPA gives complete information, dimension and rating tables and selection data on Foote Bros. Hypower Enclosed Worm Gear Drives. A copy will be sent on request.

prevailing after the Pacific war; but he threw away whatever chances he had by linking his political fortunes to a group committed to maintenance of the old landowning system, and his reliance on American aid only further weakened his position by exposing him to the charge of being a running dog of foreign imperialism.

The split which has now taken place within the Kuomintang has from one point of view helped the Communists' cause. But from another it may be embarrassing for them. The new men in power can claim that they were not responsible for the civil war; they can put the blame for it on Chiang Kai-shek and his clique. They are now bombarding the Communist areas from the air with leaflets urging peace and conciliation. Hitherto it has been the Nanking Government which has insisted on trying to crush the Communists, and the latter have had the moral advantage of standing for the cessation of an unpopular civil war and for a negotiated settlement. Now the boot's on the other leg, and it is the Communists who risk incurring the odium of belligerency if they seek to press their military advantage to the conquest of all China. They have an army which has acquired a habit of victory, and militarily it may be that they could march to Canton without much difficulty; yet it is doubtful whether the political cost of such operations would not be too high. The troops in the field must be supplied and fed; at the same time, the Communists have to take over the administration of great cities and to reorganize a chaotic economy. The strain of continued struggle would be very great. Moreover, the breakup of the old reactionary Kuomintang leadership may turn to the detriment of the Communists simply because the more progressive wing of the party now has its chance. Diehard resistance to agrarian reform has been the Communists' greatest asset, and real competition for peasant support could still be dangerous for them. It is reported that Li Tsung-jen has long been convinced of the need for a policy of agrarian reform.

IN eastern Europe Communist parties, once in control of the military and police forces of the state, have used their power to break up or absorb all non-Communist groups which have tried to cooperate with them in a common social program. In China, Mao shares the faith of Bierut and Gottwald, Rakosi and Dimitrov, and there is no reason to suppose that he would be any less ruthless and unscrupulous than they in eliminating partners in power if he had fully in his hands the means of suppression. But such a policy will not be so easy as long as there remain in China any armed forces which are not directly under Communist control. The centralized apparatus of coercion characteristic of European states enables a totalitarian party quickly to liquidate organized political opposition when once it has gained the key positions of power. In China, where the basis of state organization has remained so largely provincial, such conquest must necessarily be a piecemeal process. The Communists cannot take over a unified state because there is none; they have to create it. For this reason, and not because of any democratic scruples or moderation in the intentions of their leaders, it is likely that the Communists will have to go slow for some time. And in that time they will be subjected to the test of performance in administering the affairs of China and improving the living conditions of the Chinese people. The very looseness and formlessness of the Chinese state provide a measure of protection against a complete Communist monopoly of power throughout the country on the Czech or Polish model.

Such considerations give some ground for hoping that the impact of Chinese Communism on world affairs in the near future may not be quite so sharp or massive as the scale of recent Communist victory might suggest. On the other hand, certain adverse consequences of far-reaching importance must now be expected to figure in the international balance sheet. Any coalition government formed in China after the Communist victories, even if it does not follow a Moscow line in all respects, must to a great extent reflect the anti-American sentiments of the Communists, and the change will no doubt be manifest in the Security Council and at international conferences which China may attend. Hopes of obtaining an agreed peace treaty for Japan will recede still further into the realm of unreality. The Korean Republic, now recognized by both Britain and the United States, will be more than ever an exposed bridgehead on the Asiatic mainland, with Chinese, as well as Russian, support for the rival Communist regime in North Korea.

THE impetus given to Communism by its successes in China will be felt everywhere in the Far East—it has probably already contributed not a little to the increase of the Communist vote in the Japanese elections—and especially in those parts of Southeast Asia where there are large Chinese communities. The question of Hongkong is unlikely to lie dormant for long, for the Communists in China, as in eastern Europe, do all they can to capture and exploit nationalist feeling and turn it against the West. Hopes of getting economic assistance from the West in one form or another may cause the Communists in power to abate somewhat their vilification of the western democracies, but it is doubtful whether they can call off their campaign of hate to any considerable extent, even if they wished to do so, because it is only by intense anti-American propaganda that they can divert Chinese public attention from the fact that it is the Russian acquisitions in Manchuria, imposed on China by the Yalta dictate, which are today the greatest monument of foreign imperialism on Chinese soil. It will certainly be necessary to find fresh bones of contention with the western nations if China is to be steered in the direction which Communist principles require, and Southeast Asia is the obvious field for troublemaking.

Canadian Co. Changes Site of Aircraft Division

Montreal

• • • **Canadian Car & Foundry Co., Ltd.,** announced a change of location for its aircraft division, which formerly occupied the Noorduyn - Norseman group of building located on the Cartierville Airport at St. Laurent near here. The aircraft division now has been established in the building owned by Canadian Car, also located at the Cartierville Airport, on which additions are being made.

ARC WELDING CUTS COST 43%
...builds a stronger product

By A. D. NEAL,
Works Manager
B. F. Avery & Co.
Louisville, Kentucky

To avoid structural failures caused by striking hidden stumps or stones has been a major problem in the development of farm tractors and implements. By converting to welded design on key parts like axles and wheels, manufacturing has been simplified and field breakdowns virutally eliminated.

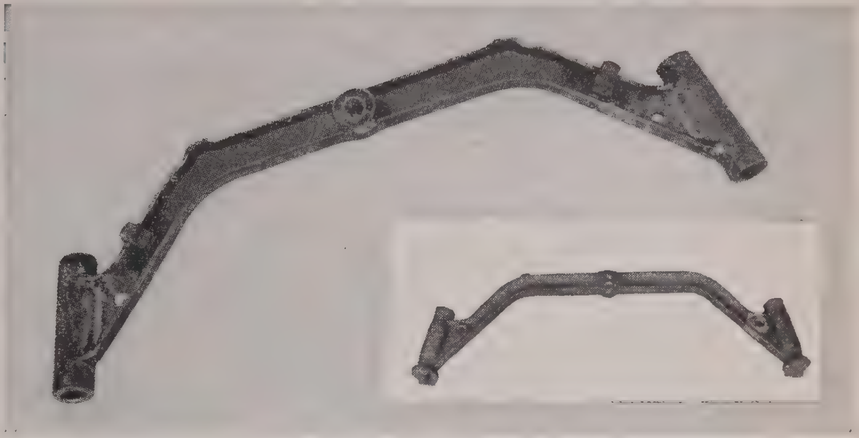


Fig. 1. *Weight reduced 30% . . . cost cut 43%.* Present design, all welded steel front axle Has pressed steel channel frame and steel spindle housings. Inset shows former construction of cast steel.

IMPROVES DURABILITY

Experience shows that the welded designs have greater strength as well as exceptional resilience to severe mechanical shocks. Building the component parts from fabricated steel also eliminates the chance for any difficulties through inconsistencies in cast metals. Thus, with welded design, greater product dependability is achieved to meet unknown and abnormal operational needs.

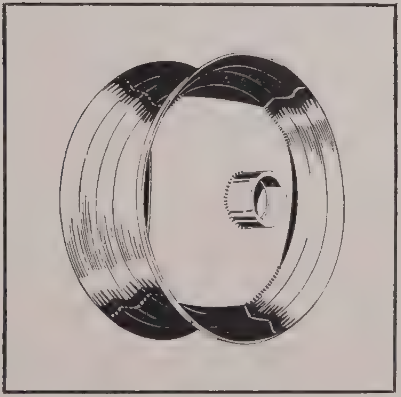


Fig. 2. *Stronger and more durable* all welded steel front wheel for farm tractor now used.

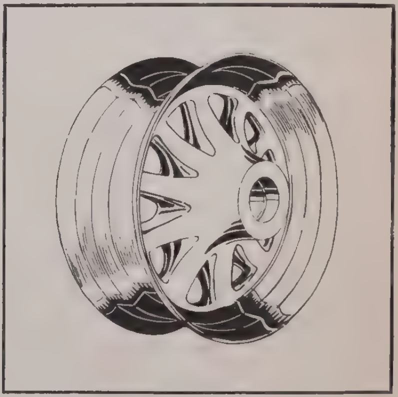


Fig. 3. *Former construction* had cast steel hub welded to rolled steel rim.

SIMPLIFIES MANUFACTURE

Substantial savings in manufacturing costs result in fabricating our tractor and implement parts with arc welding. Less material is required since components are stamped from steel plate or machined from bar stock with high speed equipment. Arc welding is done on simple, quick operating swing-type fixtures permitting fast downhand welding. On most jobs, no further machining is required after welding.

Fig. 4. *Cost cut 62% . . . weight down 69%.* Weld-fabricating a front tractor wheel. Component parts shown on table are located in simple fixture for welding.

The above is published by **THE LINCOLN ELECTRIC COMPANY** *in the interests of progress.*
Machine Design Studies available to engineers and designers. Write The Lincoln Electric Company, Dept. 52, Cleveland 1, Ohio.

• **OILED SHEETS**—Large tonnages of cold rolled sheets 18, 20, and 22 gage, in most popular sizes are being offered for sale delivered eastern coast points at a price under $190 a net ton. The offerings are firm, from Houston, to the extent they are willing to ship on a sight draft bill of lading basis to rated companies. Sheets are allegedly prime in every respect and are double paper wrapped on 4-in. wooden skids, tension tied and oiled. The f. o. b. Houston price is 8½ cents a lb. THE IRON AGE was told that most of the tonnages were originally rolled and shipped to Texas by large eastern mills.

• **CANADA, TOO**—Trade Minister C. D. Howe says that the Canadian government is prepared to lend money to steel companies on a 50-50 basis to help them expand primary production. Expanding on the announcement of steel plant help in the speech from the Throne, Mr. Howe said there was no limit on the extent to which the government would provide loans to match steel company expansion funds. Several months ago the government asked Canadian steel producers to draw up programs for expansion of primary facilities. So far, the only company to submit a program to the government is Steel Co. of Canada at Hamilton.

• **NO TAKERS**—WAA reported to THE IRON AGE that they received no bids on the surplus East Chicago, Ind., steel foundry offered for sale on Jan. 21 (see p. 111, Jan. 20). This property is easily adaptable to making conversion ingots. The facilities will now be thrown open for sale or lease, first come, first served.

• **"COLD" WAR, NOT "PRICE" WAR**—All is quiet on the western front—Los Angeles, that is—so far as steel warehouses are concerned in spite of the Market Brief published in the Jan. 13 issue to the effect that at least one warehouse was luring business by offering extended free deliveries. Careful investigation has failed to reveal any break in the long established practice of warehouses in the Los Angeles area of delivering within the "Metropolitan Area" (the same area as established under the OPA) at 15c cwt. There is no doubt but what warehouse competition is getting tougher week by week, but things are still not tough enough to warrant any operator getting out the long unused knife for a throat cutting operation. Prices vary sufficiently and change often enough to indicate that buyers are beginning to get into their inning and the competitive urge is not being stifled any longer among warehouse operators.

• **SCRAP EASIER**—For the first time since 1942 automotive scrap has been offered publicly to Detroit scrap buyers. During the past week Buick Motor Div. has asked for bids on 1800 tons of steel scrap. In addition, 600 tons of bushelings and 250 tons of malleable borings will be sold to the highest bidder. Cadillac, another General Motors division, has offered 500 tons of scrap for public sale. Reports here indicate that during the past week at least one Pittsburgh mill has declined to accept ear-marked scrap from a Detroit auto plant.

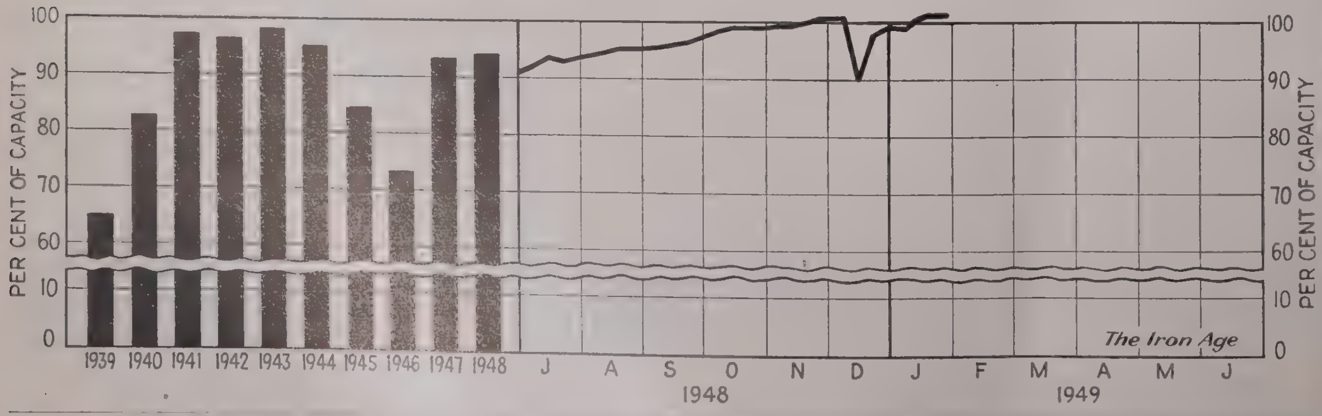
• **PROGRESS REPORT**—E. G. Grace, chairman of Bethlehem Steel Co., reported an increase of nearly 3 million net tons in its steelmaking capacity in the last 10 years. The capacity rose from 11,247,000 tons in 1939 to 14,200,000 tons as of today. Mr. Grace's statement was made in a special issue of the *Bethlehem Review,* a magazine published by the company for its 147,000 employees. The report also listed Bethlehem contributions to steelmaking progress.

• **SLIPPED**—Last week it was reported that one of the largest structural producers in the Chicago area was experiencing diminishing backlogs. This should have read one of the largest structural *fabricators. Producers* report that allocations of structurals for second quarter will be less in some cases than they were first quarter. Some of the mills didn't cut their quotas, they merely cut them the same as the first quarter.

• **GEAR INDEX UP**—The December index volume for the gearing industry is up 5.4 pct, compared with November, according to the American Gear Manufacturers Assn. The new index figure is 325.9 (1935-39 = 100).

• **DEAL IS OFF**—A rumored deal to grab control of the A. M. Byers Co., Pittsburgh, dissolved into thin air last week when State and Federal securities men began an investigation. At the meeting of the company's stockholders all 10 directors were reelected without opposition. Dr. Louis Cohen of New York, a dentist and former member of 625 Associates Inc., futile organ in the abortive Follansbee stock deal a year ago, urged payment of more dividends on common stock. However, he made no attempt to name a director. Charles Price Davis, head of Sunsteel Co., New York, a steel brokerage firm dealing in free market steel pipe, allegedly had said he knew some people interested in buying the Byers Co. The Byers Co. makes welded wrought iron pipe.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
January 25	102.0	99.5*	96.0*	100.0	102.0*	105.0	89.5	102.0	107.0*	100.5	107.0	84.5	98.5	101.0
February 1	101.5	100.0	94.0	100.0	101.0	105.0	100.5	102.0	102.0	101.0	107.0	84.5	106.5	101.0

* Revised.

Industrial News Summary

- ***Government Losing Case Against Steel***
- ***Steel Market Trending Towards Normal***
- ***Oil Companies Catching Up on Supplies***

THE Government's case against steel on capacity and output appears to be falling apart—fast. Even though Washington may not know it the steel market is trending quietly toward a balance in supply and demand. It won't be too many months before the evolution is complete.

This does not mean that every Tom, Dick and Harry can get all the steel he wants, when he wants it, in the next few months. But it does mean that within a few months there will be little difference between the steel market then and in times like 1936 to 1938. In those years there were periods when deliveries were as far behind as 22 weeks but there was no furor for more capacity and more output.

In the present case the momentum of the unprecedented output of steel—which for the third week has been at an annual rate of 97 million ingot tons — is scaring some economists and chartists. Of course they scare easily. But when steel consumers are, for the first time since the war, talking about not taking some of their quotas, and when gray market steel is going begging, it looks as if a trend toward easier times is setting in.

But that does not mean that the country is in for a big dip in steel output. For every cancellation this week, and for weeks to come, there will be many who will want the coveted space on the mills. And there are still parts of the country that think they are getting less steel than they need. It won't be long until they will find their participation greater.

A CLOSE check by THE IRON AGE this week shows that the auto companies hope to continue their heavy buying of steel. But in the auto center there are some who are fed up with high cost conversion deals. Some steel users have forced the prices on conversion down. Others have withdrawn from this high priced market. Others still need steel so much that they will be in the conversion market for awhile.

Appliance markets are definitely weak when it comes to steel demand. More of these makers have shown an inclination to eliminate all high priced methods of obtaining steel. Still others have not taken up their full mill quotas.

One of the main supports to the steel market as far as the future is concerned is the oil and gas industry. This week at least one oil company which had not expected to be able to get certain types of pipe until much later this year was offered tonnage for spring delivery. This is not uniform with all companies but it is a fact that involves at least one major company.

Executives of another oil company told THE IRON AGE that they hope to be caught up on their tough pipe requirements by the middle of this year. This is a surprising statement since many oil concerns in the past have had orders on the books running into 1950 and beyond. Furthermore, oil and gas firms have been heavy supporters of the conversion markets.

This week the gray market price on 16-in., 20-in. and 24-in. line pipe is $215 a net ton in the Midwest. This is off $80 to $100 a ton from a year ago. Such pipe is only being bought by those who are "up against it."

THE IRON AGE this week reaffirms its report of Dec. 15 that: Output of steel and steel demand will be heavy for at least the first half of this year; that after that time it is anyone's guess; that the steel market is going to a normal condition at a higher level than prewar and that by the end of 1949 the industry will be well able to carry on a war or a defense program—without do dads, however. All signs this week point more than ever to this outlook. But signs do not point to a serious and precipitous drop in steel output during the greater part of 1949. What 1950 will bring is too far for practical crystal gazers to rush into print.

NINE steel companies having about 70 pct of the country's steel capacity reported a total net income of $409,024,221 for 1948. This compares with $316,722,050 for the same firms in 1947 or an increase of 29.6 pct in 1948 over 1947. In 1929 the same companies made an aggregate net income of $322,732,407 but in that year steel production was much lower and wage rates were 65.4¢ per hr compared with an average of about $1.63 an hr in 1948.

Steel ingot output this week is unchanged at 101 pct of capacity. THE IRON AGE steel scrap composite price is down 16¢ a gross ton this week to $40.42 a ton because of a drop in the average price of heavy melting at Chicago.

It was beginning to look this week as if the lower scrap prices are forerunners of less pressure in the steel market later this year. Whether prime steel scrap will go much lower in price remains to be seen. But action of large buyers in staying away from the market—if they are out long enough—may cause further declines.

Lundberg Screw Products Co. makes better studs at lower cost with J&L ELECTREAT COLD-FINISHED STEEL BARS

J&L STEEL

SQUARES
ROUNDS
HEXAGONS
FLATS

Cutting precision threads on J&L Electreat Steel with a two-spindle threader at Lundberg Screw Products Co., Lansing, Mich.

Steel costs are reduced 20% to 30% . . .

Heat treating of finished studs is eliminated.

Steel studs made by Lundberg for such equipment as truck axles, farm implements and diesel locomotives, must be made to exact specifications.

By using J&L *Electreat* cold-finished bars to replace higher-cost alloys, such as chrome-molybdenum and chrome-nickel-molybdenum, Lundberg not only meets the customer's specifications but also obtains *two savings: Steel costs are reduced*, and *the nuisance and expense of heat treating is eliminated.*

In addition—finished studs are of better quality. They are free from scale and distortion caused by "batch" heat treating. They have clean, sharp threads. Inspection rejects are reduced.

Each bar of J&L *Electreat* cold-finished steel is individually heat treated at the mill by the electric-induction process under exacting control. The flexibility of heat control in the Electreat process permits "tailor-made" combinations of surface and core properties to fit *your* requirements.

Many fabricators of gears, couplings, bolts, nuts, shafts and other steel parts take advantage of these money-saving qualities of J&L *Electreat.* The booklet, "*New* J&L *Electreat* Heat-Treated, Cold-Finished Steel," compares the properties obtained by the Electreat process with conventional "batch" heat-treatment and points the way to greater profits. Let us send you a copy.

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Steelmen Hope Government Will O.K. Accelerated Depreciation

System Permitted During War; The Methods Now Used Are Open to Controversy

○ ○ ○

By STEVE SMOKE
Associate Editor

○ ○ ○

New York

• • • **Steel Companies** have a big problem. It centers around handling the depreciation of worn and exhausted equipment. They know what they have to do for financial stability. But there are a lot of accounting cans and can'ts that have the whole picture confused. Some companies are going ahead and doing something with the hope that it will be acceptable, others are doing nothing and complaining about the situation, while still others are just waiting to see who comes up with the right answer.

U. S. Steel has led the way in attempting to solve this problem. They have adopted a method of accelerated depreciation on the basis of costs instead of one based on purchasing power recovery. Here's briefly what this means:

A piece of equipment bought 20 years ago might have cost $1000. It was depreciated over that period of time so that when it came time to replace it in 1948, they had $1000 in a fund to do it with.

Now comes 1948. This same piece of equipment costs $2000 because of the rise in equipment prices. The company has set aside only $1000. But they are now $1000 short. To make up the difference they have to take money from profits reducing stockholders' earnings, borrow (float stocks or bonds) or replace current capacity with smaller facilities that the depreciation fund affords. All are poor business procedure.

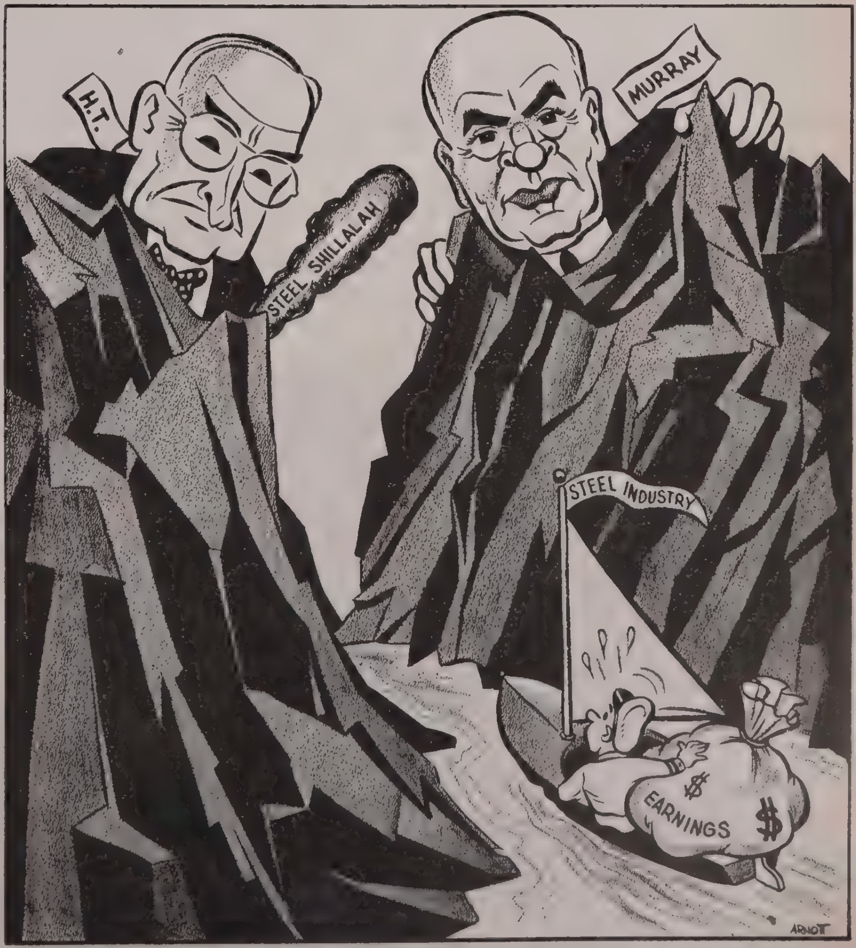
In 1947, U. S. Steel took inventory of the situation. They found out that they would have to set aside an additional sum equal to 30 pct of the normal depreciation. Replacement costs continued to rise. In 1948 it was necessary to raise this additional fund to 60 pct of the normal depreciation and make it retroactive to 1947.

This money was not being taken from profits as the company sees it. It was merely channeling a sum equal to 60 pct of the normal depreciation into the proper account to take care of rising replacement costs. But here's the hitch. The money was being used for depreciation purposes, but it was not deductable for income tax purposes.

Quite a furor was raised in accounting circles about the method U. S. Steel was using. It was not in accordance with accepted accounting principles and would not be approved by federal income tax authorities, some accountants claimed. So in 1949 U. S. Steel is using a new method of accelerating depreciation.

This year when the company buys new equipment that costs $2000 they are going to depreciate it at an accelerated rate of 10 pct above the normal 5 pct rate or at 15 pct of its cost. This is planned for next year, too. The accelerated depreciation is in addition to the normal depreciation. But the total depreciation over the equipment's expected life will not exceed its original cost.

Scylla and Charybdis?



This accelerated amount will be reduced ratably each year as the operating rate may drop with the normal 5 pct being taken when operating rates are at 70 pct or lower.

Whether this system will or will not be found acceptable to federal authorities is open to conjecture. It is the closest U. S. Steel can come to the rule which the American Institute of Accountants have adopted and which the Securities Exchange Commission supports. They, as all other steel companies, have a problem here. How it will work out remains to be seen.

Is accelerated depreciation justifiable? That's a question. But here's how steel people look at it:

You buy a house in 1928 and pay $10,000 for it. In 1948 you get a job in another town, sell your house and get $20,000 for it. The Government steps in and taxes you $2500 on your capital gain of $10,000. You have $17,500 left.

Then you move to the other town. You find a house exactly like the one you sold and it is for sale at $20,000, exactly what you sold your house for. You have a problem on your hands. You have to either dig into your bank account, borrow money, or get a smaller house. It works the same way in the steel industry. But the last thing they want to do is reduce current steelmaking capacity by replacing equipment they now have with smaller equipment that the money they have will buy.

Republic Steel Corp., Youngstown Sheet & Tube Co. and National Steel Corp. last year approached this problem in much the same manner as U. S. Steel did in 1947 and 1948. Their plans for 1949 have not yet been reported. Inland Steel Co. has heretofore handled the situation through a special appropriation.

Bethlehem Steel Co. and Jones & Laughlin Steel Corp. have not taken any definite action. Admiral Ben Moreell, president and chairman of the board of J & L, has, however, proposed that up to 50 pct of new equipment costs be allowed to be written off in 1 to 5 years and that they be deductible for Federal income tax purposes. Total depreciation here, too, would not exceed the original cost of the facilities.

Henry J. Kaiser also has long been an exponent of accelerated depreciation. He recently stated that "the President likely would find an expansion of industry exactly as took place during the war" if accelerated depreciation were permitted as was the case during the war.

Steelmen point out that acceptance of some such procedure by the tax authorities is essential to their economy. They feel that many companies operated in the red during the early and mid-thirties because this problem was not properly handled previously. Everything else in the accounting procedure is handled on the basis of current prices; products, wages, materials et al. They hope depreciation can be computed on the same basis.

OPEN HOUSE: *Celebrating its 50th year of building automatic machine tools, Potter & Johnson, a subsidiary of Pratt & Whitney, held an open house, inviting the families of the employees of the company. Some 1200 visited the plant.*

SHIPPING DEPT

NLRB Reduces Pending Cases by Nearly 60 Pct

Washington

• • • **The National** Labor Relations Board has reduced the number of pending cases by nearly 60 pct over the past 9 months. Since last April, it has cut the number down from 14,400 to 6,100, a year-end report shows.

Fewer cases were filed in December than in any other month in 1948, the report shows—a total of 1662 were filed during the month. During the same period, the board closed more than 2700.

Petitions for union shop elections exceeded all other types of cases by far. But even this type of case was down by almost a third as the year ended.

Of the 712 such requests during December, 511 were filed by the AFL, 95 by CIO affiliates, and the same number by independent unions.

During the month, employers filed 21 petitions for collective bargaining elections and requests for decertification of unions totaled 28.

New Plant Near Completion

Cleveland

• • • **First unit** of the new $3 million general chemicals manufacturing plant of B. F. Goodrich Chemical Co. at Avon Lake, Ohio, is scheduled to start operations in the second quarter of this year, according to W. S. Richardson, president.

New plasticizers for vinyl and synthetic resins will be the first products made in the new plant, Mr. Richardson said. Trial quantities of the new plasticizers have already been made available to industry from the company's pilot plant at Avon Lake.

Steel Leaders See Market Differently But Measure It With The Same Yardstick

o o o

By TOM CAMPBELL
News-Markets Editor

o o o

New York

• • • **Two well-known** steel leaders had their say on the state of the steel market last week. One was conservative in his remarks. The other was more prone to look ahead. But to say that their remarks were contradictory would not be correct.

Irving S. Olds, U. S. Steel board chairman, saw little change in steel demand. He said that cancellations were not important and that as far as his company was concerned they had taken place only in orders from appliance people, such as stovemakers.

He had nothing to say about the future demand. As a rule Mr. Olds does not look into the crystal ball but confines his statements to the current period and what it shows. He did say that backlogs were 4 to 5 months instead of the last report of 5 to 6 months. But Mr. Olds has never placed much confidence in backlogs as a criterion of things to come.

Eugene G. Grace, Bethlehem's chairman of the board, would make a good head writer. He is usually good for at least two statements that get a good play. Last week was no exception. He said that he was worrying about whether the steel industry was expanding its capacity too much. And he said without equivocation that there were soft spots in steel, that there had been important cancellations and that after the next 6-month period it was anyone's guess on the steel outlook.

But neither of these statements meant that the steel rate was going to drop soon—or even at the end of 6 months. They both pointed up what has been known in steel circles for the past month and a half. THE IRON AGE, in the Dec. 16, 1948, issue, flatly said that pressure would be off steel companies this year and that the steel market was nearing normal on a higher level than prewar and that it was anyone's guess after the next 6 months.

Comparisons with 1920 and other prewar periods in steel could be dangerous. About the only period which has some semblance to the current one is the middle of 1937 when steel consumers started to draw in their horns and live off inventory. They did this through most of 1938. Because of that the steel rate sagged to a low level. But when the inventories were chewed up the rate was upped again. Then came the war.

Currently steel stocks are not large in view of demand. But they could loom large overnight if demand from the public and from users of things made from steel cut orders drastically or dropped out of the market. There is no sign of that this week.

The outlook for steel over the next year is one of the hardest to figure out in steel history. It can be no more than a guess now. But it is good that heads of steel companies are vocal on the state of their order books and the outlook for future business. The note of caution is representative of the industry's ability to move quickly as the facts dictate. For an IRON AGE survey of present market conditions and predictions of the future trend, see page 154 of this issue.

Summary of Steel Company Earnings

COMPANY	YEARLY EARNINGS		
	1948	1947	1929
UNITED STATES STEEL CORP.	$129,552,424	$127,098,148	$197,592,060
BETHLEHEM STEEL CORP.	90,347,560	51,088,375	42,242,980
NATIONAL STEEL CORP.	40,121,506	26,838,788	11,776,097
INLAND STEEL CO.	38,606,899	29,888,558	11,712,374
ARMCO STEEL CORP.	32,000,000	25,002,211	6,110,000
JONES & LAUGHLIN STEEL CORP.	31,222,451	19,225,184	20,848,748
YOUNGSTOWN SHEET & TUBE CO.	29,711,732	22,299,923	23,774,174
WHEELING STEEL CORP.	15,050,045	12,445,161	8,005,664
ALAN WOOD STEEL CO.	4,100,000	1,955,446	....
LUKENS STEEL CO.	2,411,604	2,835,702	670,310

Briggs Purchases Plant Located At Youngstown

Detroit

• • • **The tendency of** Detroit automobile plants to move into the backyards of steel mills was evident again this week when it was announced that Briggs Mfg. Co., Detroit, has purchased a plant near Youngstown, Ohio, from Carnegie-Illinois Steel Corp. The plant has been operated as a handmill. The purchase price was not announced.

According to W. Dean Robinson, president of Briggs, the company expects ultimately to employ 1000 workers in its Youngstown plant.

The property consists of three buildings and 18 acres of land. Most of the equipment has been moved out of the buildings and installation of blanking and shearing equipment is scheduled to begin within a few weeks, according to Walter O. Briggs, Jr., executive vice-president of Briggs. A limited amount of work will have to be done in the plant prior to installation of the press equipment, Mr. Briggs explained.

No assembly of auto parts in Youngstown is planned for the present, it was indicated. It is expected that operation of the new plant will relieve the present congestion at the Kack Ave. plant in Detroit.

A company spokesman explained there will be a considerable savings in freight charges as a result of conducting blanking operations at Youngstown. It was explained that, on some items, as much as 30 pct of the steel hauled to Detroit is returned as scrap to the steel mills.

It is known that several Detroit manufacturers are considering potential economies of operating plants outside of the Detroit area and within the natural distribution area of the large established steel mills.

Industrial Briefs . . .

• More Coke—Bethlehem Steel Co. has announced that coke producing capacity of its Sparrows Point plant will be increased by 17 pct by the addition of a new coke oven battery. The battery will comprise 65 coke ovens having a total capacity of 420,000 net tons per year.

• New Mill Drive—A million-dollar electric drive for the McLouth Steel Corp.'s new 42 in. hot strip finishing mill in Detroit will be built by the Westinghouse Electric Corp. Output from the mill will provide additional sheet steel for the Detroit area.

• Adds to Warehouse—Nottingham Steel Co., Cleveland, has announced the completion of a new warehouse built adjacent to its present facilities. The new warehouse will be used for handling additional quantities and sizes of steel and other metals.

• Merges—Open Hearth Combustion Co., Chicago, is now associated with the Freyn Engineering Co. as a subsidiary. George Danforth, formerly president of Open Hearth Combustion, is chairman of the board of the new concern. They will function as independent units but their offices will be consolidated at Freyn Engineering.

• Welding Agent — Myron Zucker Engineering Co., Detroit, has been named representative in southeast Michigan and Toledo for Precision Welder & Machine Co., Cincinnati, manufacturers of resistance welding equipment.

• Heavy Turning Roll—Preliminary design of a new turning roll, equipped with rubber tired rollers, has been completed and the first production model is undergoing routine tests at Worthington Pump & Machinery Corp.'s Dunellen Works. The tests will determine the most economical means of turning the heavier work for automatic as well as manual welding.

• Industrialization—Announcement has been made that India will spend approximately $60 million in the United States for iron and steel manufacturing plants and fabricated steel frames in 1949, 1950 and 1951 in a vast program of industrialization. The government of India has also reduced the import duty on plant machinery.

• Expanding Facilities—The Foxboro Co., makers of industrial instruments for measurement and control, has announced that work has begun on an addition to its Pittsburgh building. The new addition will be used for the assembling of control valves and for warehousing an increased stock of valves and instruments.

• Takes Over—Business of Strand Building Products Co., previously a subsidiary corporation of Detroit Steel Products Co., will now be carried on by Strand Garage Door Div. of Detroit Steel. There will be no changes in management or marketing procedures.

• New Product—Carnegie-Illinois Steel Corp., Chicago, has developed a new stainless steel molding to be used on outdoor billboards. The molding, aside from being much more attractive, will last much longer than the former types of molding used on outdoor signs.

• Opens Branch Office—Snow Mfg. Co., Bellwood, Ill., has opened a direct factory branch office at 720 Euclid Ave., Cleveland. It will handle all sales and service in the Cleveland and northern Ohio area of its drilling, tapping and threading machines.

• Buys WAA Plant — The Timken Roller Bearing Co., Canton, Ohio, has announced the purchase of the Timken defense plant from the War Assets Administration. It is understood that the sales price was $3,243,700. The sale also included machinery.

Studebaker Completes Biggest Year; Alters Trim on 1949 Cars

Chicago

• • • **Studebaker has** just completed its biggest year, H. S. Vance, chairman and president, told more than 1100 dealers assembled here recently to inspect the 1949 cars.

The 1948 output totaled 234,000 units, Mr. Vance told the dealers, compared with 191,451 in 1947. The company is planning to produce even more vehicles during 1949 if steel is available, he said.

Engineering changes in the 1949 models have been limited to a few chassis revisions but striking alterations have been made in upholstery and trim. In addition to luxurious new nylon fabrics in the Land Cruiser model, the dealers and the press were shown a number of unusual combinations of two-tone seat upholstery harmonized with trim for the side walls and head lining.

One basic body stamping is changed. In rearranging the luggage compartment to permit vertical mounting of the spare tire, an entirely new die was required for the rear section of the floor.

Bumpers are more massive and the wrap-around type. High tensile, low alloy .20 carbon steel is used. Gage is unchanged and the bumpers are one-piece.

A stainless grille without a chrome strike will be used during 1949. Name plate, hood ornament, trim rings for the lights and the fender decorations are diecast. Some of the door handles are diecast while others are stamping assemblies.

The hand brake, located at the right of the steering wheel, releases by thumb pressure rather than by turning. The door of the glove compartment opens with a slight turn of a new type lock.

On the Champion models, radiator capacity has been increased from 10 to 11 qt. and tire size increased to 6.40 x 15.

Stroke of the Commander engine has been changed from 4⅜ to 4¾, raising the rated brake hp from 94 to 100. A new carburetor is used on the Champion engine and the manifold and valve lift have been redesigned.

ECA Tells Marshall Plan Countries To Tighten Belts on Aluminum and Lead

Washington

• • • **Notice has been** served on Marshall Plan countries by the Economic Cooperation Administration that they must tighten up their belts and not seek more critical lead and aluminum from western nations than is absolutely necessary.

A recently appointed ECA commission has been directed to make a study to determine what those "irreducible" needs are. The United Kingdom, Belgium and the Netherlands, main countries concerned, have promised to help.

The action is a follow-up of recent charges that these countries were importing these metals from western nations and selling them back to the United States at a profit.

Last week, the ECA produced cold figures from the Dept. of Commerce to show that during the months of June through November the three countries had shipped more than 38,000 tons of aluminum and nearly 29,000 tons of lead into the United States.

Britain, Belgium and Holland had, in effect, categorically denied shipments of such proportions. It has since been determined that most such shipments had been made in a roundabout way through other countries and thus did not show up in the records of the three nations.

The actual figures, according to ECA (and Commerce) are as follows:

Aluminum — United Kingdom, 21,058 tons; Belgium, 518 tons; and the Netherlands, 4383 tons.

Lead—United Kingdom, 942 tons; Belgium, 8731 tons; and the Netherlands, 3583 tons.

At the same time, ECA reports, through November it had authorized procurement (by the three countries) of nearly 186,000 tons of aluminum and 113,000 tons of lead.

By country, the procurements were allocated as follows: Britain, 166,028 tons of aluminum and 72,018 tons of lead; Netherlands, 6864 tons of aluminum and 9536 tons of lead; Belgium, 2560 tons of aluminum.

It should be pointed out that for the most part these purchases were to be made in countries other than the United States. A major portion was to be purchased in Canada, some in Mexico and Brazil—and even Argentina.

Most of the metal in the disputed import movements has been classified as secondary. Nevertheless, says ECA, any Marshall Plan financed movement would "certainly have a tendency to further tighten the United States supply situation."

Agreeing that "we should encourage in every way the continued shipment to the United States of all the secondary metals that can be gathered up," the ECA says firmly that the mission must "determine the irreducible needs of the participating countries for western metals" for which scrap metal cannot be substituted.

Proposes Building Lab For Ore-Mineral Study

Washington

• • • **The federal** government will build a $500,000 laboratory at Spokane to investigate northwestern ores and minerals, if a bill (S. 462) sponsored by Senator Magnuson, D., Wash., becomes law.

The Magnuson proposal, which is being considered by the Senate Interior Committee, provides for an annual appropriation of $150,000 to carry on studies and research of benefit to the northwestern mining industry.

The proposed laboratory would conduct basic research on methods of rock-breaking, ground support, and rock transportation. It would also make laboratory tests of mining equipment and would study the application of basic physical principles to mining problems. The station also would be a center of information and assistance in regional mining matters.

Buys Avondale Company

Birmingham

• • • **The Avondale** Stove & Foundry Co., Birmingham, has been sold to J. F. Day, Sr., and J. F. Day, Jr., operators of the J. F. Day Screen & Weatherstrip Co. of the same city.

117 YEARS OF SERVICE: *Left to right are Walter T. Weir, machine shop foreman; Frank T. Weir, machinist; Robert J. Weir, chief foundry schedule clerk and William J. Weir, assistant auditor. All four have 117 years service combined with Mesta Machine Co., Pittsburgh, which recently celebrated its 50th anniversary. Sixty per cent of the employees have been with Mesta for more than 10 years.*

Industrial Growth of Deep South Reflects

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

New Orleans

• • • **There is no** softness in steel demand here. Consumers could use more plates and structural shapes but they are not complaining much. They know these items are tight all over and generally feel their suppliers are giving them a fair deal. Gray marketeers have never done much business in New Orleans—are doing even less now.

Oil, ship repairing, boat and barge building and containers are the major uses of steel in this, the South's largest city. Industry in general and metalworking in particular play a relatively small part in the city's economy but that part is growing. From 25,000 in 1940 total employment in industrial plants shot up to about 70,000 in 1948.

The New Orleans industrial area consists of 30 metalworking plants having more than 21 plant workers, according to a survey recently completed by THE IRON AGE. This area, including all of Jefferson and Orleans Counties, is dominated by 6 transportation equipment plants and 16 fabricated metal plants.

Of the total of 7094 metalworking plant employees in the area, transportation equipment plants employ 4620 workers, while fabricated metal plants employ 1764 workers. Other metalworking plants in the New Orleans area with more than 21 plant workers are 5 other machinery plants and 1 electrical machinery and equipment plant.

Before the war New Orleans was industrially backward and none too aggressive commercially, dominated as it was by families more interested in living on interest than in risking capital. The Huey Long regime was no help either. The city relied heavily upon what port activity there was, of course, and upon the tourist trade. The latter was good for a nice warehouse business in ½-in. carbon bars—used to fabricate ornamental ironwork. The port handled a good share of America's prewar iron and steel exports.

The war was a shot in the arm. And instead of collapsing when shipbuilding and other war contracts were cancelled, New Orleans' industrial growth continued. Oil, foreign trade and some industrial diversification are among the reasons. Now there is a powerful and successful drive to attract new industries and to sell the efficiency of the Port of New Orleans, second largest in the nation.

Established to meet the challenge of postwar foreign commerce, International House has done more than anything else to promote the Port. It is a non-profit membership organization that acts as a foreign trade clearing house. To the businessman from another land it offers information, cooperation, secretarial and club facilities. Across the street is the big new International Trade Mart, a non-profit wholesale trading center with elegant sales and display spaces.

The Port probably accounts, directly and indirectly, for 70 pct of the total business done in New Orleans. It has extensive docking facilities where 2700 to 3000 ocean going ships arrive annually. About 40 inland barge lines use the port, some of them bringing iron and steel from Birmingham and from Chicago, Wheeling, Pittsburgh and other steel centers to the north. Barges are particularly suited to hauling big tonnages of steel and cast iron pipe, much of it destined for the West.

U. S. Steel's Tennessee Coal, Iron & R. R. Co., is the big steel supplier here even though its Birmingham district plants are 420-odd miles away by rail and considerably more by barge. Current low inventories ban large shipments to most consumers. Jones & Laughlin's is the only big steel warehouse in the area. It is located on the indus-

COATED ALLOY RESEARCH: *R. B. Wagner, chemical engineer at New York University, regulates the flow of hydrogen gas into a quartz tube electric furnace. The purpose of his project is to determine the properties of a chromium alloy coating produced on the surface of various high temperature alloys while in the furnace. Project is sponsored by the Research & Development Div. of Loewy Construction Co., Inc.*

Strong Steel Demand

But Consumers Believe That Producers Are Dividing Steel Output Fairly

* * *

The New South

New York

• • • The South has made remarkable industrial progress in the past few years. This is the first of a series of reports on the industrial growth of several Southeastern cities. It is not a complete survey of the metalworking industry in these cities; rather it attempts to show the direction this progress is taking.—The Editors.

trial canal where it handles barge, rail and truck shipments. In addition to usual warehouse products it also handles big tonnages of oil country steel.

Elimination of the multiple basing point system meant little to New Orleans steel buyers. Abolition of the arbitrary Gulf Coast delivered prices some years ago bothered them more. Ever since the end of the war little attention was paid by other companies to the TC&I basing point at Birmingham. They shipped f.o.b. if they shipped at all. The change will mean that when these buyers do get steel by barge they'll pay the barge freight rate. They used to pay the rail freight regardless of the method of shipment actually used.

Four companies have fair-sized container plants here. Rheem Mfg. Co., with a payroll of 115, operates the biggest. The others are Inland Steel Container Co., Jones & Laughlin Steel Barrel Co., and U. S. Steel's Bennett Mfg. Div. The Inland plant, which employs about 110, also makes household space heaters (living room stoves).

Equitable Equipment Co. is the most diversified metalworking firm in the state. It makes tugboats, water taxis, barges and oil drilling rigs, fabricates tanks and pressure vessels, warehouses stainless steel. It also acts as agent for some 50 nationally known products that run the gamut from air conditioning systems and concrete mixers to tool steel and wire rope.

Equitable's president, Capt. Neville Levy (Navy, World War II), also has a finger in politics and in International House. He has some pretty positive opinions and one of them concerns labor: "I'll bargain with them all they want," he says, "but they've got to start by agreeing on an open shop."

"I'm satisfied we're getting our fair share of steel," Capt. Levy said. "However, if we could get all we want now we could boost employment from 500 to 1200." Here his fist hit the desk: "But I don't want it if it means putting the Government into the steel business. That would just make things a hell of a lot worse!"

Asked about the gray market Capt. Levy exploded. "We haven't bought a pound of the stuff! Gray—I call them black—marketeers are just parasites who'd die off if people quit buying from them. At the prices they charge, plus the freight from the places they have this stuff, we couldn't compete with shipyards right next door to the mills anyway."

Alexander Shipyards, Inc., operates two yards in New Orleans. L. B. Durant, vice-president, reports no serious steel supply problem and is running at about 65 pct of the wartime level. With a fair break on new steel and a yardful of surplus landing craft and equipment the company is able to do a brisk repair business, refit and convert some boats, build small ones entirely. Shipbreaking, once quite active in New Orleans, is slowing down because the wreckers are about out of ships.

Higgins, Inc. has a different story on steel supply. During its peak wartime building month Higgins received 13,000 tons of steel. Now it averages 20 to 30 tons, most of it from the neighboring J & L warehouse. Company president Andrew J. Higgins declined to comment for publication on the steel situation. "If I did," he snorted, "It would take up a whole page in fine type and you'd have to expurgate most all of it."

Higgins has been told by steel people that it has no historical basis for a steel allocation since it bought little steel before the war (Higgins made wooden boats). People who know that many companies get steel with little regard to past purchases don't think that is the real reason. Perhaps steel sales officials are not sure Higgins will use much steel when they're out selling it and demand for steel products is off. Perhaps he will, but apparently they'd rather take a chance on customers who have bought in good times and bad.

Meanwhile Higgins has an official 250-ton allocation of barge building steel that it can't place with any steel company, according to A. J. Higgins, Jr., vice-president. "To get barge orders," said Mr. Higgins, "We've got to be sure of the steel. To get the steel we have to have firm orders for barges. It's a mess." He added that the company had been able to get about 135 tons of structurals and plate — mostly structurals. It couldn't get any more plate and since all the material was under allocation it is frozen, can't be used for anything else.

Observers studying the long-term trend believe New Orleans will continue to use more and more steel. There are some exceptional uses in the area now that may or may not hold up: the chemical plants and oil refineries going up in the vicinity. Indications of a dip in big oil company spending have already appeared. And off-shore exploration and drilling for oil may get a setback because the Federal Government has stepped in to take title to these lands away from the states. Rigs for off-shore drilling have meant nice business for shipyards here. A rig takes about 200 tons of steel, the latter frequently furnished by the oil company that orders it.

Weir Kilby Acquires Majority Stock Of Taylor-Wharton Co.

Philadelphia

• • • **Following the unsuccessful** attempt of Cincinnati scrap interests to acquire a majority interest in the Taylor-Wharton Iron & Steel Co., High Bridge, N. J., a merger of the company with Weir Kilby Corp., Cincinnati, manufacturers of railroad trackwork, has been announced.

The association of the two businesses, negotiations for which have been under way for almost a year, offers advantages to stockholders of both companies, according to George R. Hanks, president of Taylor-Wharton. Weir Kilby has plants for the manufacture of special trackwork at Cincinnati and Birmingham. The move will permit Taylor-Wharton to supply the two plants with manganese steel and also to expand its distribution in the Birmingham area. Weir Kilby Corp. is expected to benefit from the diversification afforded by participation in the manganese steel and seamless gas cylinder business.

The combination will involve no changes in the management or corporate name of either company. It was accomplished by a purchase of about 32,000 shares of the deposited 34,090 shares of Taylor-Wharton stock by Weir Kilby Corp. All the outstanding stock of Weir Kilby has been acquired by means of an exchange of Taylor-Wharton stock. The result of the exchange of stock was to increase the outstanding capital stock by 19,568 shares, to a total of 103,400 on a consolidated basis.

Awaits RFC Loan

Waltham, Mass.

• • • **Hopes were** revived here last week that the financially embarrassed Waltham Watch Co. might soon be back in business. A mass meeting of more than 2000 was informed that the Reconstruction Finance Corp. had agreed to loan the company $5 million.

The company was also reported to have been assured an additional $1 million credit from banks holding Waltham credits. Another $3 million of equity capital is to be raised among the 2300 unemployed employees of the nation's oldest watchmaker and principal industry of this city.

Promoted at Armour

Chicago

• • • **Mary Baeyertz** has been appointed assistant chairman, metals research department, Armour Research Foundation, Chicago. Miss Baeyertz started with Armour Mar. 1, 1947. She was formerly employed as supervisor of research at the South Works of Carnegie-Illinois Steel Corp., having been there 17 years. Miss Baeyertz holds a doctor's and a master's degree from the University of Columbia.

Canadian Government Would Lend Money To Their Steel Firms Too

Ottawa

• • • **According to** information presented in the speech from the Throne in the House of Commons, the Canadian government will ask Parliament to approve a measure for loans to producers of basic steel in an effort to boost production. Giving official confirmation to former speculation, the move means federal aid for the industry whose output is the key to the progress of the country's industry generally.

Despite record production for 1948, supply of iron and steel in Canada continues to run well behind demand for civilian needs, and there is a rearmament program on the horizon. Officials recently stated that it would take probably 2 years before new production facilities would be able to make much of an impact on the general production situation.

The speech also stated that the government will ask continuation of steel control.

Sources close to the Canadian steel industry say primary producers of steel would benefit from the proposed federal financial aid to the industry. The plan would have to be adaptable to the primary producers if it is to be workable. Two years is not too long a time to increase its annual output. It would take at least 2 years to install required machinery.

Import More German Scrap

Washington

• • • **Shipments of** iron and steel scrap from Germany to the United States in the month of December amounted to 105,524 tons, according to the Office of Industry Cooperation. This represents an increase of about 25 pct over the November shipments of 80,709 tons.

The December shipments included 21,560 tons of Army generated scrap and 83,964 tons of commercial scrap. Total shipments of scrap from Germany to the United States through December amounted to 353,766 tons. All but 4000 tons of this amount were shipped in the last 6 months of the year.

Coming Events

Feb. 9-10 **Steel Founders Society of America**, annual meeting, Chicago.
Feb. 14-17 **American Institute of Mining & Metallurgical Engineers**, annual meeting, San Francisco.
Feb. 23-25 **American Concrete Institute**, annual meeting, New York.
Feb. 28-Mar. 4 **American Society for Testing Materials**, spring meeting, Chicago.
Mar. 8-10 **Society of Automotive Engineers**, passenger car, body and production meeting, Detroit.
Apr. 4-6 **American Gas Assn.**, distribution, motor vehicle and corrosion conference, Cincinnati.
Apr. 5-6 **Metal Powder Assn.**, annual meeting, Chicago.
Apr. 8-9 **Lead Industries Assn.**, annual meeting, Chicago.
Apr. 11-14 **National Assn. of Corrosion Engineers**, annual conference and exhibition, Cincinnati.
Apr. 14-15 **Magnesium Assn.**, annual meeting, Chicago.
Apr. 18-20 **Midwest Power Conference**, Chicago.
Apr. 18-20 **American Institute of Mining & Metallurgical Engineers**, annual Conference of Openhearth Steel Committee, Chicago.

Canadian Ore Search Moves North of Area Already Proven in Quebec-Labrador

Toronto

• • • **For 3 months** last summer 21 men slogged through the barren wilderness of Upper Quebec near the head of Ungava Bay. They were looking for iron ore. But before they were to get anywhere on that score they had to make a geological survey of the concession.

The concession is owned by Quebec-Labrador Development Co., Ltd., of Toronto. They are one of five companies which have obtained concessions from the Quebec Government to prospect for iron ore—or anything else for that matter. The heavy strike of high grade iron ore previously reported (THE IRON AGE, Nov. 4, 1948, p 155) is more than 120 miles to the south.

With time running out the party made up of a geologist, students, bushmen and indians were able to make rough maps of the area. But they did not find sufficient quantities of hematite, magnatite and limonite to warrent the term "ore" according to Dr. William G. Wahl, geologist for the company.

No deposits of soft hematite ore were found. But, according to Dr. Wahl, "the geological conditions necessary to the formation of this type of ore were present." An attempt to drill some bog ore deposits with an x-ray drill was stymied due to late arrival of the equipment.

It has been recommended by D. C. Leggett, chief of the party last summer, that continued exploration and drilling be done when weather permits this year. He also pointed out that the best way to get any ore out—if it is found—would be by way of Ungava Bay. It was argued that the rail passage would be too long if the Hollinger road planned for Burnt Creek should eventually be extended northward.

At least two major steel companies in the United States have been approached about participating in the exploration work on the Quebec-Labrador Development concession—not to be confused with the Hollinger-Hanna strike farther south. No iron ore has been proven, nor has it been found yet. But the party doing the exploration last summer feels that there is ore there and points out that the concession shows signs of having ore formations similar to some found in the northern part of the Hollinger-Hanna fields.

The costs of exploring last summer were large. More than $76,000 were spent. This included high cost of flying in a drill. The party planned for this summer will cost somewhere around $40,000. The company has made approaches to steel companies in the States on the basis of some financial help.

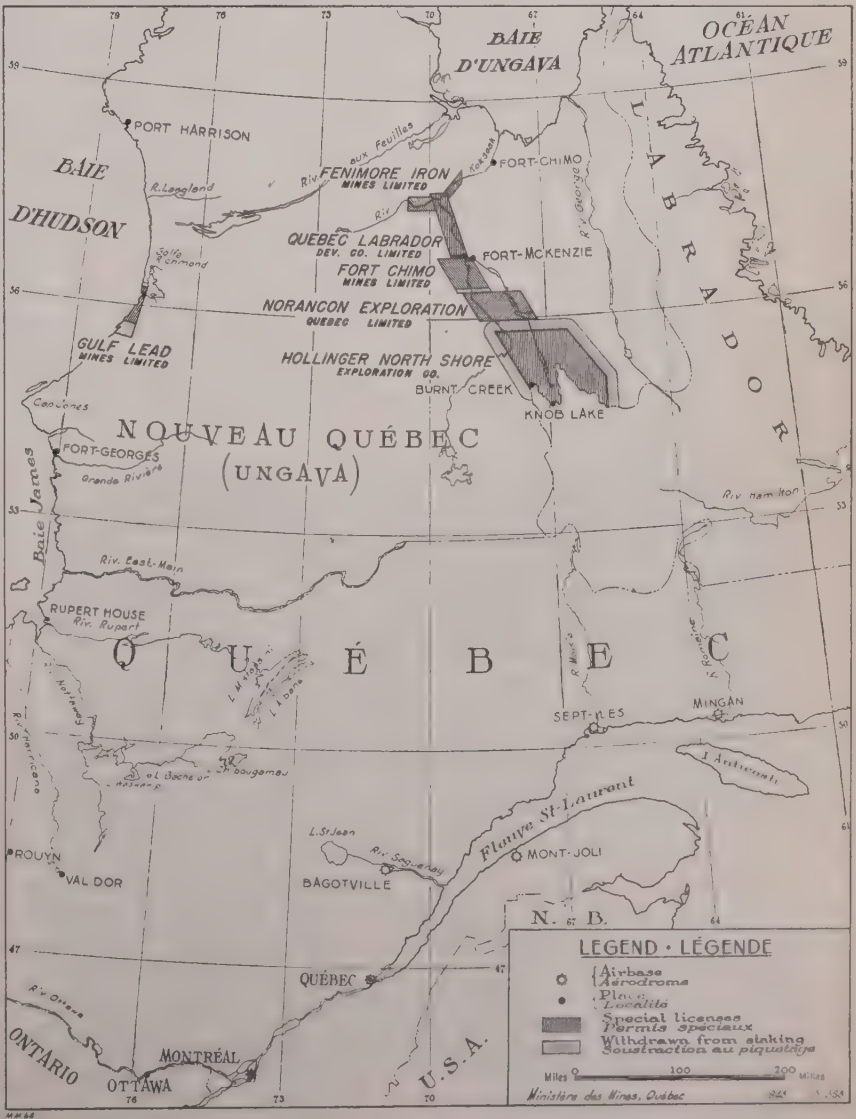
Judging by elapsed time between original geological studies and final drilling and proving in the Hollinger-Hanna area, it might be quite a while before any significant action will be taken on the Toronto firm's concession.

Employment Holds Steady

Niagara Falls

• • • **Industrial** employment in this city is holding near its postwar peak, according to Dudley E. Schank, New York State Employment Service manager.

IRON ORE CONCESSIONS: *This map shows the concessions for iron ore explorations granted by the Province of Quebec. The Quebec-Labrador Development Co. grant is shown near Ungava Bay. The Hollinger-Hanna grant is also shown for Quebec but not for Labrador where additional concessions have been granted. Hollinger's complete picture was in* THE IRON AGE, *Nov. 4, 1948, p. 159.*


BAIE D'UNGAVA
OCÉAN ATLANTIQUE
PORT HARRISON
BAIE D'HUDSON
R. Leaf
Riv. aux Feuilles
FENIMORE IRON MINES LIMITED
FORT-CHIMO
Riv. Koksoak
R. George
QUEBEC LABRADOR DEV. CO. LIMITED
FORT CHIMO MINES LIMITED
FORT-MCKENZIE
NORANCON EXPLORATION QUEBEC LIMITED
GULF LEAD MINES LIMITED
HOLLINGER NORTH SHORE EXPLORATION CO.
BURNT CREEK
KNOB LAKE
LABRADOR
NOUVEAU QUÉBEC (UNGAVA)
FORT-GEORGES
Grande Rivière
Baie James
Riv. East-Main
RUPERT HOUSE
Riv. Rupert
Riv. Hamilton
QUÉBEC
SEPT-ILES
MINGAN
I. Anticosti
Fleuve St-Laurent
MONT-JOLI
L. St Jean
Riv. Saguenay
BAGOTVILLE
ROUYN
VAL DOR
QUÉBEC
MONTRÉAL
OTTAWA
ONTARIO
Riv. Ottawa
U.S.A.
N. B.
LEGEND · LÉGENDE
Airbase
Aérodrome
Place
Localité
Special licenses
Permis spéciaux
Withdrawn from staking
Soustraction au piquetage
Miles 0 100 200 Milles
Ministère des Mines, Québec

Volta Redonda Chief Coming Here; Seeks To Triple Capacity

New York

• • • **Volta Redonda,** Brazilian national steel mill, is expected to reach capacity production by the end of February, according to a report by the Brazilian government trade bureau here. First steel flowed at the plant on June 23, 1946.

General Silvio Raulino de Oliveira, Volta Redonda president, will arrive in the United States this month to work out plans for increasing present capacity of the plant with the aim of enlarging it until Brazil can meet its industrial needs out of its own steel output.

An official announcement stated that plans would be studied for "three-fold expansion of installations at the Volta Redonda Mill and establishment of additional lines of production required by Brazil for industrial expansion."

At capacity rate, its approximate present level, Volta Redonda will be turning out 250,000 metric tons of steel yearly. Together with Brazil's 24 other steel mills, it will be producing more than 40,000 metric tons of steel monthly. This rate was almost reached in 1948, when production for the first 9 months amounted to 357,061 metric tons. This is equivalent to a monthly output of 39,573 tons from all mills.

This amounts to slightly more than half of present Brazilian steel consumption. But industrial needs for steel are growing at such a rapid pace that the country will probably continue to depend upon foreign steel to a large degree even after Volta Redonda's capacity is tripled, the bureau said. On the basis of incomplete data, total 1948 output was estimated at 475.000 tons from all mills. Thus, with its present capacity, Volta Redonda was producing about 53 pct of all Brazilian steel.

While reports from Brazil give no details concerning plans of General de Oliveira in the U. S., it is recalled that U. S. funds were essential in starting the Volta Redonda plant. Of total construction cost estimated at $100 million, $45 million came from a loan bearing 4 pct interest from the Export-Import Bank. In addition to retiring part of its loan the company paid its first dividend of 6 pct last August.

INDUCTION HARDENING: *Crankshafts are shown on the dolly ready to roll into the first station of the tunnel line for induction hardening at the Peoria, Ill., Caterpillar plant. The control panel for this unit is shown at the right.*

British Columbia Asks Canadian Government To Halt Ore Exports

Vancouver, B. C.

• • • **Coast Iron** Company, Ltd., which is working the iron ore deposits at Upper Quinsam Lake, in the Campbell River watershed on Vancouver Island, made its first shipment of 1000 tons of iron ore to the electric smelting plant at Wenatchee, Washington. This is the first shipment made from British Columbia in 50 years, and is part of a 50,000-ton order. A permit has been granted for export of an additional 49,000 tons.

Coast Iron Co., Ltd., was formed recently with an authorized capital of 500,000 shares, of which 50 pct is held by Frith-Kershaw (Exports), Ltd., 35 pct by Privateer Mines, Ltd., and 15 pct by associated interests. It is expected the company's initial order will be followed by others.

The export of iron ore is being strongly opposed by the province of British Columbia, and Mines Minister R. C. MacDonald has urged Ottawa to issue no more permits. He pointed out that B. C. ore should be processed in the province, insisting that if it can be shipped by barge and rail to Wenatchee and processed at a profit, it would be still more profitable to process it at home.

Gray Iron Group Elects

Saginaw, Mich.

• • • **Executives of** gray iron foundries in northeastern Michigan last week elected R. W. Foster, Bay City Foundry Co., Bay City, Mich., chairman, secretary and treasurer of a newly organized management group of Gray Iron Founders' Society. Robert Holth, Littite Foundries, Inc., Port Huron, was made vice-chairman.

Monthly meetings will be held on the afternoon of the first Thursday in each month. R. L. Collier, executive vice-president of the society, who addressed the meeting, gave a brief review of society achievements during the past year and a preview of future operations. He said GIFS is opposing the continuation of voluntary allocation of pig iron for housing end-uses beyond the expiration date of Public Law 395.

Shrinking Business Volume Recorded By Midwestern Warehouses

Production Cutbacks and Fear Of Expensive Inventory Blamed for Slump

° ° °

By D. I. BROWN
Chicago Regional Editor

° ° °

Chicago

• • • **Warehouses** in the Midwest have their fingers crossed. Business has declined in the last 30 days. Customers have cut their orders to match actual production—production volume in many lines is down. Last year the average tonnage per order, one sheet and strip warehouse told The Iron Age, was close to 1600 lb. Right now the average tonnage per order is 800 lb which can mean any one of a dozen things. One thing is certain, much of the high pressure for deliveries is gone.

In some cases warehouses are building up small inventories on a few scattered products. Stainless steels are a drug on the market and inventories are considered to be very high by most warehousemen who handle these products. Copper and brass have been moving very slowly for 60 days and inventories are entirely adequate.

One other steel product has caught up—but good. Black plate can be had out of inventory from many large and small houses alike in Chicago today. This condition appears to have been caused when export tonnages fell off and the mills diverted shipments to domestic accounts. The salesmen are finding it tough to sell this item. They get a lead, go after the business, and at times learn the mills have shipped direct, or another warehouse has beaten them to the punch.

Despite the "We don't want some" attitude of many warehouse buyers, the warehouses themselves say this has not been reflected in more offerings of tonnages from the mills to the warehouses. It would be expected that if buyers cut back on warehouse orders, they might also hold up mill shipments. Apparently this has not yet happened.

Of the six warehouses queried on this particular question, all of them gave essentially the same answer, "Consumers are still afraid to cancel or hold up mill quotas for fear they won't get prompt attention if and when they again need the steel."

True, this can't go on for very long, but warehousemen told The Iron Age that most consumers are willing to take a 30 to 60 gamble that the present softness will not last. If the reduced manufacturing schedules continue much longer, mill cancellations rather than holdups are expected as by that time many consumers will have normal inventories. In fact, many may find they have excessive inventories.

None of the warehouses are exactly despairing over present conditions. They can still sell all the steel they are getting with the few exceptions mentioned above. They are having to actually solicit in cases, which, of course, is a new wrinkle. Some of the warehouse executives pointed out that for the past 2 years they have been turning over inventories at a rate of six times a year. This is double the normal rate, they point out.

Warehouses selling aluminum products report this market is still very good. Most of the substitution of aluminum for steel is gone, but aluminum is now going into its natural applications and mill shipments are still below demand at the warehouse level. Aluminum manufacturers severely cut quotas to practically all their customers for first quarter so that supplies of these items are short to everyone.

"Why did business decline, how long will it last and how bad will it get?" was asked of Chicago warehousemen. Some blame consumers cutbacks and the general buying caution on the unsettled labor and tax situation. These men declare business in general is coasting—waiting to see how the new Congress will act on these important issues. Others told The Iron Age that this is a lot of baloney. These men say that production volume in many lines of metal goods has deteriorated, it appears to be going lower and that cutbacks by manufacturers directly reflect this change, which is not a result of the election or a fear on the part of businessmen themselves.

One thing to be noted is that warehouse buyers are questioning prices. Six months ago, or even later, prices were not too important. Today they are, and warehousemen told The Iron Age price will become even a larger factor in the weeks to come.

Many warehouses are tied in directly with conversion programs. They slit, edge, shear, or pickle and oil many of the end products which start as conversion ingots. These plants are still doing a landoffice business. In fact, if it hadn't been for this portion of the conversion program that they get, a lot of Chicago warehouses would have folded long ago. How long this market will hold up is highly questionable. Gray market volume has dipped to a negligible trickle. If steel supply continues to catch up, conversion will also start to disappear.

The best single sustaining item to most warehouses in recent years has been cold rolled strip. The large mills have not been interested in coiled or cut strip since the war, as they prefer to concentrate on knocking out large tonnages. Strip, therefore, has been in general a warehouse item.

Warehouses buy sheet coils and slit, or slit and edge, to meet the consumers' requirements. Such products are sold on a price card where extras for width, gage, temper and finish are plenty high. It has been a profitable product for the steel-starved warehouses. Here again, how long will it last?

There is nothing to stop the mills from taking this business direct if they choose to do so. If the mills don't have slitters, they can get them in a hurry. Some warehousemen know this and are worried about it. The fact that one large Chicago mill is installing slitters has added to their fears.

Warehousemen freely predict the end of hot rolled sheet and strip as a warehouse item if present prices stick. They report it is cheaper for a consumer to buy cold rolled in most cases. If the size and type of hot rolled is cheaper in the remaining cases, the better surfaces and tolerances of the cold rolled stock are still worth the difference. Other factors which warehousemen expect to see in the immediate future is a return to normal delivery on alloy bars. Cold drawn carbon bars they also expect may ease soon.

Demand for some types of tubing has already sloughed off. Plates and shapes remain tight as ever. Supplies in sheets and strip have not improved, but demand has eased at the warehouse level, so even these items may be much easier to get, much sooner than we think.

Starting early in January a few of the larger warehouses in Chicago reported that steel consumers were offering to sell tonnages back to the warehouse. This is still going on and some warehouses have bought such offers. When asked by THE IRON AGE why their customers were offering to sell them steel which was so badly wanted last year, warehousemen said the answer was cutbacks in production schedules. High priced inventories are not safe any time, and right now in Chicago manufacturers don't want any part of such stocks.

Republic Steel Shows New Electric-Welded Pipe Mill at Gadsden

Gadsden, Ala.

• • • **Republic Steel Corp.** is making large diameter electric weld pipe at its new mill here in an operation that uses no crane hoists in the manufacturing process. Skelp, once hoisted abroard the pipe line is handled by gravity and conveyors until it is loaded by crane into gondola cars for shipment. The mill was shown to the press and to the public for the first time last week.

First shipments from the mill were made last July and it is currently producing 24-in. diam line pipe for natural gas at the rate of 100,000 tons a year on a 3-shift basis. The pipe ranges from 29 to 31 ft in length.

Earl M. Richards, Republic vice-president, operations, explained that the company had given a lot of thought to going into the pipe field here and had decided the shortage of natural gas was so severe throughout the country and so much of a handicap to industry that it warranted their putting plate into line pipe manufacture.

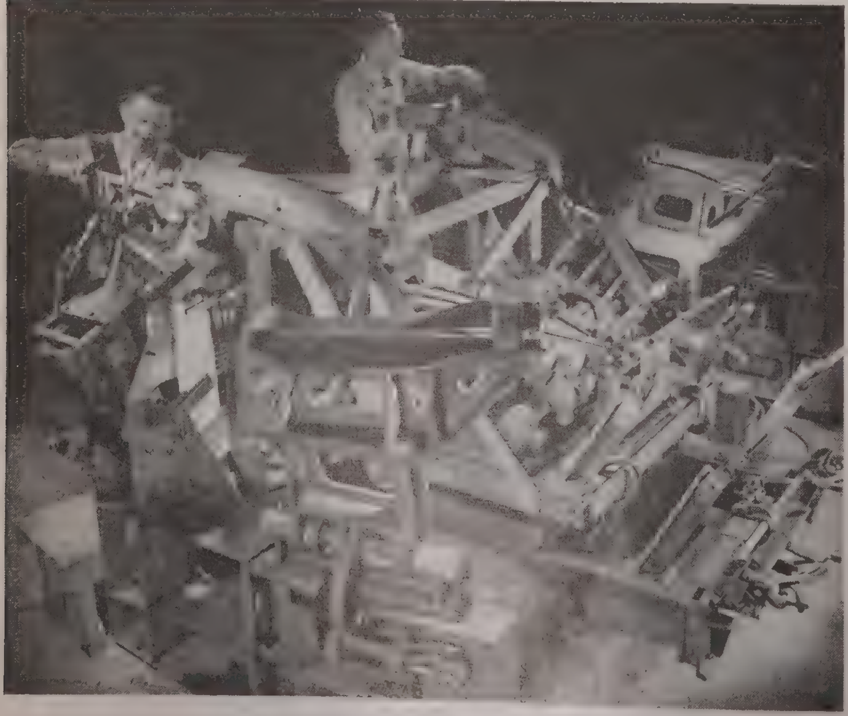
E. I. Evans, manager of Republic's southern district, explained that production had reached capacity much sooner than was expected and that current output is greater than originally planned.

Production of the mill to date has been shipped to four customers—Southern Natural Gas Co., Birmingham; Tennessee Gas and Transmission Co. of Houston, Texas; El Paso Natural Gas Co., El Paso, Texas; and Northern Natural Gas Co., Omaha. At present the mill is working on an order of 24-in. pipe for Tennessee Gas and Transmission. First order for the mill was consigned to Southern Natural Gas.

The unusually mechanized manufacturing operation begins when skelp from the 112-in. plate mill is lifted by electromagnetic hoists onto a conveyor table whence it goes to a plate edge planer. The skelp is then sheared, shot blasted, edge turned and formed on a 32-ft pyramidal bending roll. A conveyor takes it to the outside-diameter welders, thence to the inside-diameter welders. Its ends are then mechanically expanded to accommodate the gaskets needed on the next operation, hydraulic expansion. A hydraulic expander using pressures up to 2500 psi not only rounds the pipe but acts as a hydrostatic test of the welds.

The pipe then moves to lathes which finish machine the edges, turning a bevel and a land on each end. It then is conveyed to Republic inspectors, then to the customer's inspection station and on to shipping racks outside the building.

JIGS AND MORE JIGS: *After interior and exterior designs have been approved, production engineering steps in at the Fisher Body works. Here workmen are shown building fixtures to hold pieces for assembly.*



Labor Dept. Considers Steelworkers' Request To Up Minimum Wages

Washington

• • • **A proposal** by the United Steel Workers to increase the minimum wage required under the Wash-Healey Public Contracts Act in the iron and steel industry is being considered by the Labor Dept.

Evidence presented at a hearing set for Feb. 24 will be submitted to Secretary of Labor Tobin, who is empowered under the Walsh-Healey Act to determine prevailing minimum wages applicable to government contracts in amounts above $10,000 for materials, articles, supplies, and equipment.

The USW asks that the Secretary of Labor determine that the prevailing minimum wage in the industry throughout the United States, except in the South, is $1.23 an hour and that the prevailing minimum wage in the South is $1.08½ an hour. The present determination, in effect since Jan. 16, 1939, ranges from 45 cents an hour in some specified localities to 62½ cents in other specified localities.

USW also asks that the determination provide a subminimum rate of $1.18½ an hour throughout the U. S. except the South, and a subminimum rate of $1.04 an hour in the South, for certain occupations and job classifications to which the plant or job occupational minima specified in union agreements are applicable.

For purposes of the hearing, the union proposes that the South be defined as consisting of the following 12 states: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia. It is estimated that there are approximately 600,000 wage earners in the industry.

According to the union's petition, the great majority of employers in the industry are now paying a minimum wage of $1.23 an hour throughout the U. S., except in the South, and $1.08½ an hour in the South, and a plant or occupational subminimum rate of $1.18½ an hour and $1.04 an hour for certain occupations in the two areas respectively.

In a supporting letter to Secretary Tobin, Philip Murray, USW president, said that most employees in the industry work under a "Cooperative Wage Study Evaluation Program" worked out jointly by labor and management and made a part of the collective agreements. Where such programs are in effect, he proposes that the $1.18½ and $1.04 subminimum rates shall be applicable to those jobs which fall into the classifications specified as "Job Class 0-1 or 1" in the evaluation system. Where the program is not in effect, he proposes that such wages may be paid to employees working on jobs equivalent to Job Class 0-1 and 1.

New Recommendations On Reserve Plants And Tools Awaited

Washington

• • • **New recommendations** as to sale, lease, or retention by the Federal Government of the nation's industrial reserve plants and machine tools will be made before March 1.

A new committee of industrial leaders, headed by Hiland G. Batcheller, president of Allegheny Ludlum Steel Corp., is now studying the list of industrial reserve property.

The committee will present its recommendations to the Munitions Board on or about March 1, and the Secretary of Defense will then make his own report to Congress on or before Apr. 1.

Donald F. Carpenter, chairman of the Munitions Board, said the new committee would review the justifications for retention of property in the national industrial reserve, and also would review maintenance standards for the property.

The Munitions Board has thus far designated 241 plants for disposal under the provisions of the National Industrial Reserve Act (Public Law 883, 80th Congress). A total of 5693 machine tools have been designated for the reserve list, and as shipping orders are complied with, these tools are to be placed in Federal Works Agency warehouses.

SKILL: *Despite the onward march of mechanization in industry the highly skilled hand operations of the die sinker still have their place. Here in the Coraopolis, Pa. plant of Pittsburgh Forgings Co. is seen one of the vital forging procedures —the laying out of a Heppenstall hammer die.*

Construction Steel . . .

New York

• • • **The estimated total bookings** of fabricated structural steel for 1948, totaling 1,965,769 tons, were the highest reported since 1930 with the single exception of 1941 when the industry booked 2,296,954 tons. This year's bookings were 20.6 pct greater than the volume contracted for in 1947, and were 30.2 pct over the average bookings of the 5 pre-war years 1936-40.

Shipments for the year totaled 1,993,902 tons, an increase of 4 pct over 1947 and 36 pct over the average pre-war years 1936-40. The backlog (tonnage available for future fabrication) for the next 4 months only, amounted to 669,651 tons at the end of the year compared with 671,091 tons at the end of 1947.

Following is the complete tabulation of bookings and shipments:

ESTIMATED TOTAL TONNAGE FOR THE ENTIRE INDUSTRY

Contracts Closed	1948	1947	Average 1936, 1940
Jan.	160,634	104,973	107,578
Feb.	130,119	125,881	96,280
March	213,123	149,634	124,558
April	154,082	161,338	110,783
May	141,764	112,954	126,237
June	162,367	103,273	125,835
July	177,687	153,540	152,481
Aug.	172,485	146,382	113,135
Sept.	180,422	134,630	137,982
Oct.	162,739*	159,132	141,557
Nov.	140,794*	132,916	129,757
Dec.	169,553	144,103	143,313
Totals ..	1,965,769	1,628,756	1,509,496
Shipments			
Jan.	146,363	140,650	92,578
Feb.	141,556	136,126	88,626
March	167,029,	137,799	115,031
April	166,687	157,392	123,650
May	186,915	154,980	123,225
June	157,109	151,882	129,969
July	160,780	169,911	127,422
Aug.	176,306	157,952	136,389
Sept.	174,967	164,345	137,255
Oct.	164,024*	196,139	140,944
Nov.	169,796*	175,000	127,873
Dec.	182,370	172,968	121,664
Totals ..	1,993,902	1,915,144	1,464,626
Tonnage available for fabrication within the next four months	669,651	671,091	363,288

*Revised

• • • **Fabricated steel awards** this week included the following:

540 **Tons**, Marion, Ind., Manufacturing tube plant for Radio Corp. of America to Indiana Bridge Co., Muncie, Ind.
350 **Tons**, Coram, Mont., U. S. Bureau Reclamation Spec. 504, building, to American Bridge Co., Pittsburgh.
235 **Tons**, Mineola, N. Y., manufacturing building, Renwall Mfg. Co. to Grand Iron Works, N. Y.
150 **Tons**, Newton, Mass., new store for Franklin Simon Co., New York to Bethlehem Steel Co., Inc., Bethlehem, Pa.
100 **Tons**, Chicago, building for Maylor Spiral Pipe Co. to J. T. Ryerson and Son, Chicago.

• • • **Fabricated steel inquiries** this week included the following:

32,000 **Tons**, Wilmington, Del., Delaware Memorial Bridge, State of Delaware, Delaware Memorial Bridge Div., American Bridge Co., Pittsburgh, low bidder.
3865 **Tons**, Garrison, N. D., tunnel ribs to be bid through U. S. Engineers office Feb. 15.
2700 **Tons**, Indianapolis, Veterans hospital. Bids due Feb. 15.
250 **Tons**, **Harvey, Ill.**, auditorium and gymnasium building, American Bridge Co., Pittsburgh, low bidder.
160 **Tons**, Mercer County, N. J., New Jersey Dept. of Highways, bridge, Route 26 extension Section 1-B, due Feb. 4.

• • • **Reinforcing bar awards** this week included the following:

245 **Tons**, Atlanta, Ga., parts plant for Chrysler Corp., Connors to Steel Co.. Birmingham.
245 **Tons**, Auburn, Ala., football stadium for Alabama Polytechnic Institute, to Connors Steel Co., Birmingham.

• • • **Reinforcing bar inquiries** this week included the following:

1285 **Tons**, Hewhalem, Wash., powerhouse and penstock tunnel on Skagit River, Seattle Board of Public Works, Seattle, bids to Feb. 23.
920 **Tons**, Ephrata, Wash., section of West Canal, Bureau of Reclamation, Coulee Dam, Wash., Spec. 2541, bids to Mar. 1.
800 **Tons**, Washington, D. C., concrete piles for General Accounting Office Building, Public Buildings Administration, John McShain Co., Philadelphia, low bidder.
600 **Tons**, Indianapolis, Veterans hospital, bids due Feb. 15.

• • • **Steel piling awards** this week included the following:

325 **Tons**, Manasquan, N. J., sheet piling for New Jersey Highway Dept. bridge through R. B. Jaggard Engineering Co., Camden, N. J. Also 187 tons of H-piling, to Bethlehem Steel Co., Inc., Bethlehem.
114 **Tons**, Philadelphia, H-piling for Mill Creek Sewer, through Roberty Lombardi, Inc., Philadelphia, to Bethlehem Steel Co., Inc., Bethlehem.

• • • **Railroad car awards** and inquiries this week included the following:

The Norfolk & Western R. R. has ordered 25 70-ton gondolas from Virginia Bridge Co., Roanoke, Va. The Delaware, Lackawanna & Western R. R. is inquiring for 250 to 500 50-ton gondolas. Chicago & Northwestern railroad is inquiring for 1000 box cars and 250 auto box cars.

50 YEARS AGO

THE IRON AGE, *February 2, 1899*

• Armor plate made of alloy steels has had a long history. "As far back as 1878 the steel works of Holtzer in France made 4-mm plate containing chromium for the French Navy, while it was only 10 years later that the Creusot manufactured two lots of armor plate made with nickel for the first time."

• **B. F. Chambers of Waterbury, Conn., had this to say. "In my opinion, in heavy work from 10 to 20 pct of steel charged in the cupola with the rest of the mixture will produce better, cleaner and stronger castings than without it. Your per cent of steel must be in proportion to the weight of the casting."**

• The A. F. of L. was making a strong bid to get the workers an 8-hr day. THE IRON AGE says, "A call has been issued by president Samuel Gompers of the American Federation of Labor requesting all executive officers of affiliated organizations to meet in Washington on Feb. 14. It is proposed to use the officers of the different labor organizations in lobbying for the eight-hour bill in Senate."

• **Railroad car building progressed right along with the expanding rail system as, "the Pressed Steel Car Co. of Pittsburgh will erect in that city or in close proximity an entirely new plant for the manufacture of steel cars, and which will have a capacity of at least 40 cars a day."**

• American industry was growing in stature so that it could better take care of the country's demands. "The figures of the import trade for the year 1898, just issued by the Treasury Bureau of Statistics, shows the smallest importations in 20 years, with the single exception of 1885."

• Promotional schemes were an integral part of our industrial development. "The Minnesota Legislature now in session is expected to take up the question of bonusing the manufacture of pig iron in the State this winter and to give a bonus of from 50¢ to 75¢ a ton on all metal made in the State for a term of years, perhaps 10 or 15."

New Export-Import Firm Will Handle Metal, Ore

New York

• • • **A new company,** Intsel Metals Corp., has been formed according to the recent announcement of International Selling Corp. The new company will deal in nonferrous metals, steel, ores and minerals, ferroalloys and scrap. W. F. Brazeau, president of both companies, states that the new firm was established to expand the present activities of International Selling Corp. in metals and ores and to play a greater role in world trade in these items.

W. F. Brazeau

Intsel is represented in the principal countries of Western Europe, North Africa, the Middle East as well as certain countries in Latin America and the Far East.

Activities of the new company will be directed not only to the exportation of ingot and semifabricated metals to foreign markets, but also to emphasize to a much greater degree the importation of ores, semirefined and scrap metals for America's hungry metal producers. To this end the new company has recently concluded contracts for the importation of such materials valued at several million dollars.

The offices of both companies are at 70 Pine St., New York. The officers of Intsel Metals are: Sylvan Gotshal, chairman of the board; W. F. Brazeau, president; J. E. Vincent, vice-president; Carl Bauer, secretary-treasurer. Directors are the officers and Edward A. Behr, formerly member of the Advisory Committee and assistant to the vice-president of American Smelting & Refining Co.

Business Index Drops

Pittsburgh

• • • **Mid-January business** stands more than 40 pct above normal or long-term trend, despite a moderate drop last week, according to the general index compiled by the University of Pittsburgh Bureau of Business Research.

IN STEEL MILLS
IN FOUNDRIES
IN PAPER MILLS
IN TEXTILE MILLS
IN FOOD PLANTS
IN CH
IN STEVEDORING
IN WAREHOUSING
IN BOTTLING
IN TRANSPORTATION
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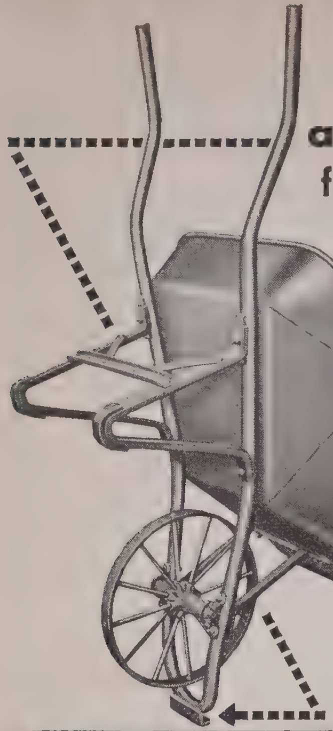

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For many years we have specialized on *Strenes Metal* cast dies which require soundness and accuracy of the highest order. We maintain the same standard on gray iron and alloy castings for machining. You are invited to consult with us.

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DAYTON 3, OHIO

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STRENES METAL • ALLOY GRAY IRON • GRAY IRON

Ice Hits Northwest Power; Business Economy Slowed

Seattle

• • • **Fingers of** ice continue to slow down the electric power generators of the Pacific Northwest and squeeze even more tightly on the industrial economy of the area.

Freezing weather in the headwaters and lower stretches of the mighty Columbia and other rivers has reduced their flow to the point where cut-backs in use is being demanded of both industrial and home users.

Isaacson Iron Works here has cut the power off the plant's zinc pots during the peak hours of from 4:30 to 6:30 p. m. after already having arranged its electric furnace operations to avoid having both units operating at the same time. Both furnaces are shut off entirely from 4:30 to 7:30 p. m. each day which means that furnace men are forced to take 3 hr off and none of them puts in a full 40-hr week. Work is spread over the entire crew.

Pacific Car & Foundry Co. of Renton, Wash., has already had to lay off 800 men and expects that 200 more will be made idle if power use must be cut an additional 15 pct.

Charges that the Bonneville Power Administration had "oversold" the capacity of its generators to the aluminum industry and hence was largely responsible for the current shortage, were strongly denied by Dr. Paul J. Raver, BPA administrator.

L. E. Karrer, executive vice-president of Puget Sound Power & Light Co., and Kenneth Fisher, executive of the Fisher Flouring Mills, stated that BPA contracted to furnish 680,000 kw to the aluminum reduction and rolling plants of the Northwest and that all but 80,000 kw of this power was on firm, or guaranteed contract. Mr. Karrer said that Bonneville Dam alone is rated at 564,000 kw and that the balance of the power sold came from the northwest power pool.

"When the power shortage began 6 weeks ago, 80,000 kw were trimmed from the aluminum power load. The three aluminum companies were asked to make a further 15 pct curtailment," Mr. Karrer reported, but added that he didn't know if the companies had complied with this request.

Last week Dr. Raver answered these charges by stating that private utilities received 525,000 kw more from Bonneville than did the aluminum companies and public power agencies, and that this amount exceeded firm contracts with the private utilities by 225,000 kw. He further stated that on one day last week Puget Sound received approximately 67,000 kw more than Bonneville's contract demanded.

As the power controversy continues, Aluminum Co. of America announced that a start was being made on its rod and wire mill at Vancouver, Wash., near its reduction plant. Contract for grading of the site has been let and construction is expected to start within a month.

The Portland area apparently hasn't been quite so hard hit by the shortage of electrical power although voluntary curtailment is the rule. No cutbacks in production have been announced.

Receive Safety Awards

Youngstown

• • • **Two plaques** and a certificate recognizing safety records have been presented to three Youngstown district plants by H. E. Engelbaugh, district manager for the Youngstown Sheet & Tube Co.

One plaque, presented by the company, went to the Campbell but and lap weld tube mill, which is chalking up its best safety record in its 46 years of operation, by working a million man-hrs without a disabling injury.

This is the second time this department has passed the million man-hr mark. In 1936 it worked 1,390,963 man-hrs without a disabling injury.

The second plaque, presented to Hubbard blast furnace, was awarded by the National Safety Council in Chicago for operating a year without a disabling injury. The last lost-time accident there was April 6, 1947.

The certificate, also awarded by the National Safety Council, was presented to Brier Hill plant for reducing its accident frequency rate between July 1, 1947 and June 30, 1948.

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Comparative Results	Competitive Cutter (Carbide Tipped Blades)	Axial Face Kennamill (Solid Kennametal Blades)
Number castings milled per 8 hour shift	140	140
Number blades per pair of cutters	48	52
Cost per blade	$1.20 (est)	$4.20
Cost, two complete cutters	$312.00	$660.00
Number regrinds per blade	22	250
Number castings milled per grind	140	280
Number hours between grinds	8	16*
Blade cost per 8 hour shift	$2.618	$.437
Blade cost per casting milled	$.01870	$.00312
Time to grind cutter	90 min.	45 min.
Hourly grinding cost (est)	$4.00	$4.00
Grinding cost *per 8 hour shift* or per 140 castings	$6.00	$1.50*
Grinding cost per casting milled	$.0428	$.0107
Total blade and grinding cost		
Per 8 hour shift	$8.61	$1.937
Per casting milled	$.0615	$.0138
Per year (2 shifts. 5 days, 50 weeks)	$4,305.00	$968.50
**Reground once every other shift*		
Annual savings		**$3,336.50**
at an increased first cost of		**$348.00**

Long Life and Extremely Low Maintenance Are Cost-Saving Advantages of Solid Blade Axial Face Kennamill

The operation detailed in the table is a production job—where tooling costs are an important factor. It comprises straddle milling the top and bottom surfaces of cast iron cylinder heads.

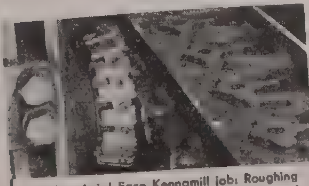
Use of the Axial Face Kennamill reduced milling costs on this job 80%. And—this saving was made even though the competitive cutter was carbide-tipped, and performed exceptionally well.

The Axial Face Kennamill has extremely abrasion-resistant *solid Kennametal* blades, securely held in position by wedge construction, which prevents thermal strains and permits the high strength of Kennametal to be utilized. These blades can be sharpened at minimum expense in a standard tool and cutter grinder. No steel has to be ground. Only two readily-accessible blade surfaces need sharpening.

In the typical report shown above these facts stand out:

- Solid Kennametal blades last twice as long between regrinds
- More than 10 times as many regrinds can be made per blade
- Only one-half as much time is required to sharpen the cutter

Ask our representative to show you what solid blade Axial Face Kennamills can do on your cast iron milling jobs.



Another Axial Face Kennamill job: Roughing and finishing in one pass—627 pieces milled before cutter required sharpening.

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(Solid blades)

"CF" KENNAMILL
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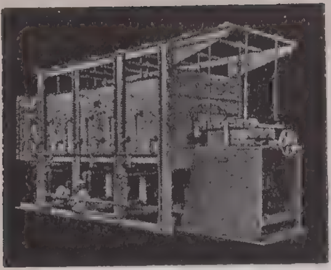
"ODD JOB" FACE KENNAMILL
(Kennametal—tipped blades)



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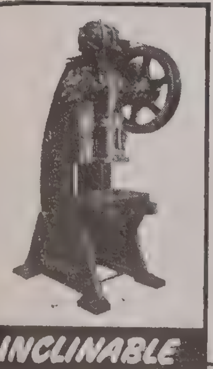

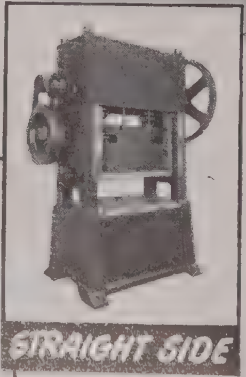

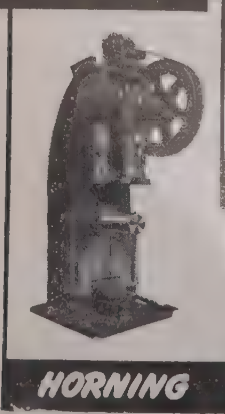

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P-6

THOMAS
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Exports Drop 100,000 Tons During November

Washington

• • • **Iron and steel** exports fell off by more than 100,000 net tons during November, according to the Commerce Dept. Total tonnage exported during the month was 227,106, bringing the total shipments for the first 11 months of the year to 3,931,870 tons.

Tinplate and taggers' tin again accounted for the lion's share of the month's exports—32,428 tons. Black steel sheets made up another 29,431 tons of the November total. Nonalloy steel bars took another large chunk—14,277 tons—of the total figure.

Net tonnages of iron and steel exported during November are:

	Nov. 1948	11 Mo. Total—1948
Ingots, blooms, billets, slabs, sheet bars	7,272	202,879
Wire rods	975	35,257
Skelp	4,910	52,970
Iron bars	174	3,471
Concrete reinforcement bars	5,419	117,939
Steel bars, cold-finished	2,665	42,387
Other steel bars (excluding alloy)	14,277	274,095
Alloy steel bars	1,703	50,350
Welding rods, electric	708	13,982
Boiler plate	905	26,957
Other plates, not fab.	14,247	291,985
Plates, fab., punched or shaped	1,400	22,046
Iron sheets, black	943	16,263
Steel sheets, black	29,431	370,521
Galvanized sheets	3,778	55,956
Strip steel, cold-rolled	4,591	53,170
Strip steel, hot-rolled	4,721	62,608
Tinplate and Tagger's tin	32,428	539,368
Terne plate (incl. long ternes)	462	8,051
Structural shapes, plain	17,361	269,574
Structural shapes, fab.	6,047	145,798
Frame and sashes	219	2,790
Sheet piling	1,036	32,164
Rails, 60 lb per yard and over	19,270	233,518
Rails, less than 60 lb per yard	205	8,724
Rails, relaying	137	29,004
Splice bars and tie plates	2,563	45,129
Frogs and switches	134	5,161
Railroad spikes	532	8,691
Railroad bolts, nuts, and washers	243	7,304
Car wheels, tires and axles	1,704	35,521
Seamless black pipe	1,106	18,867
Seamless casing and oil line pipe	10,012	200,970
Seamless boiler tubes	1,886	33,451
Welded black pipe	3,547	54,576
Welded galvanized pipe	2,791	36,551
Welded casing and oil line pipe	2,453	141,005
Other pipe and fittings	4,821	62,229
Welded boiler tubes	25	1,563
Plain wire	5,612	66,704
Galvanized wire	2,687	45,317
Barbed wire	1,875	35,294
Woven wire fencing	985	9,977
Woven wire screen cloth	315	5,135
Wire rope and strand	761	12,061
Wire nails	1,236	17,669
Other wire and manufactures	1,762	38,226
Horseshoe nails	2	400
Tacks	136	3,205
Other nails, incl. staples	783	9,856
Bolts, nuts, rivets and washers except railroad	2,305	50,092
Forgings	1,524	24,536
Horseshoes	22	553
TOTAL	227,106	3,931,870

Second Quarter Tinplate Quota Announced by ODC

Washington

• • • A **second quarter** export quota of 113,000 net tons of tinplate has been established following consultation recently with the Tinplate Industry Advisory Committee, according to the Office of Domestic Commerce.

Approved foreign orders for tinplate, up to the 113,000-ton limit, will be supported by ratings (CXS) and must be accepted by tin mills, officials said.

Additional quantities of tinplate, up to 17,000 tons, may be licensed, but will not be rated, for export during the second quarter of this year. Of this total, 9500 tons may be licensed for packaging abroad of foods to be imported into the United States. The remaining 7500 tons may be licensed for uses permitted under Conservation Order M-43, including use abroad by American oil companies. Licenses for tinplate to be used for other than food preservation will be limited to electrolytic plate (maximum .50 lb. coating) or special coated manufacturing ternes. Acceptance of licensed but unrated export orders is discretionary with tin mills, it was pointed out.

Both rated and unrated export quotas for the second quarter of 1949 are the same as those for the first quarter.

H. B. McCoy, Director of ODC, said that while it is likely that the United States will receive somewhat larger allocations of pig tin during 1949 than heretofore, requirements of the nation's strategic stockpile will make impossible any increased allotments for industrial uses.

Country quotas for the rated tonnage are as follows:

ECA COUNTRIES	2nd Quarter, 1949
Austria	1,000
BelgiumLuxembourg	3,500
Denmark	3,000
France	3,000
Germany-Bizone	800
Greece	1,000
Iceland	50
Italy	2,500
Ireland	500
Netherlands	11,000
Norway	6,000
Portugal	3,900
Sweden	3,000
Switzerland	3,350
Trieste	70
Turkey	1,200
	43,870

(CONTINUED ON NEXT PAGE)

DURASPUN
Centrifugally Cast Pipe

is Better Pipe

Centrifugal castings are superior castings. The metal is sounder, finer-grained, more uniform. It is free of gas pockets, blow holes and other defects often difficult to keep out of static castings. Tensile strength is close to that of rolled or hot-forged alloy steel. Dimensions are accurate, usually requiring less machining and finishing and thus speeding production.

If you require *extra* qualities in your high alloy pipe, investigate DURASPUN Centrifugally Cast Pipe. We can produce it in OD ranging from 2½" to 24" and in lengths up to 15' according to diameter. Our experience in the field of centrifugal high alloy castings dates back to 1931. Our experience in the field of static high alloy casting goes back to 1922. We can give you good service.

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Weldimatics
WELD IT WITH WELDIT EQUIPMENT SUPPLIES

WELDING TORCH W-45
Strong and sturdy, 14 inches long, yet weighs only 17 ounces. Lock control for continuous welding. Cuts oxygen and acetylene costs one-third.

BLOWPIPE C-47
Aluminum alloy construction... good balance, comfortable grip. Closed hand releases gas ... open hand cuts it off. Reduces idle flame fire hazard. Works perfectly with natural gas, manufactured gas, butane and compressed air.

WELDING TORCH W-46
Has long lever for closed hand or fingertip gas control, allows wider operating range. Weight, 14 ounces; length, 13 inches.

Meet all Underwriters Requirements

Weldimatics

... are daily cutting costs, reducing fire hazards in many of the world's largest industrial plants. Some distributor territory still available. Write today for descriptive bulletin.

SEE YOUR WELDIT DEALER

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KRANE KAR Loads and Unloads freight cars, trucks, trailers; Stores materials; expedites Plant Maintenance. Often cuts cost of handling loads to 8c a ton.

No Mobile Crane made today can match **KRANE KAR** speed, safety, and economy of operation... picking up, carrying, and placing loads . . . anywhere, in plant or yard . . . uneven terrain, congested areas, low overhead, up and down ramps.

KRANE KAR
MOVES LOADS EASIER - FASTER - SLASHES COST OF MATERIALS HANDLING

KRANE KAR handles loads at Sides as well as at Front.

Gas or Diesel. Pneumatic or solid rubber tires; 9 to 37 ft. booms or adjustable telescopic booms; Electric magnet, clamshell bucket, and other accessories available. Ask for illustrated Bulletin No. 79.

USERS: General Motors, Bethlehem Steel, Boeing, Pullman-Standard, Lima Locomotive, Carnegie-Illinois, U. S. Steel, Basic Magnesium, etc.

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1½, 2½, 5, AND 10 TON CAPACITIES

KRANE KAR

TRADE MARK REGISTERED

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ECA TERRITORIES	
Belgian Congo	25
British West Indies	25
French Indo-China	100
French North Africa	4,200
French Oceania-New Caledonia	50
French West Africa	175
Hong Kong	125
Madagascar-Reunion	500
Malayan Federation	300
Netherlands Indies	1,400
Portuguese African Territory (Angola)	300
LATIN AMERICA	
Argentina	5,000
Bolivia	175
Brazil	6,000
Chile	2,950
Colombia	1,000
Costa Rica	30
Cuba	4,100
Dominican Republic	150
Ecuador	57
Guatemala	50
Haiti	23
Mexico	3,750
Nicaragua	40
Panama	155
Paraguay	520
Peru	1,000
Salvador	30
Uruguay	1,400
Venezuela	850
	27,280
BRITISH COMMONWEALTH	
Australia	10,500
Newfoundland	60
New Zealand	2,000
Union of South Africa	7,850
	20,410
FAR EAST	
China	2,250
Japan	1,050
Philippines	1,400
Siam	300
	5,000
MIDDLE EAST	
Ceylon	35
Egypt	1,900
India	3,400
Iran	25
Israel	1,000
Lebanon	200
Pakistan	1,300
Syria	50
	7,910
OTHER COUNTRIES	
Spain	1,000
Undistributed reserve	330
TOTAL	113,000

TCI Develops New Mine

Pittsburgh

• • • **The Tennessee Coal,** Iron & Railroad Co. is developing their Concord coal mine located near Birmingham to a nominal capacity of 7500 tons of coking coal per day, according to J. C. Gray, assistant manager of raw materials. When completed, the mine will have the largest productive capacity of any TCI mine.

Describes Investigation Of a Zinc-Lead Deposit

Washington

• • • **A Bureau of Mines** investigation of the Royal Princess zinc-lead deposit, about 9½ miles south of Galena, Ill., is described in a report recently released by the bureau. The study was made in the fall of 1946 and the spring of 1947.

The ore is described as a mixture of galena and (zinc) blende crystals deposited as a thin coating on iron sulfide, and as chunks in loose rock and sand. Although lead was mined in the vicinity of Galena by the Indians as early as 1687, the first large-scale production started in 1823 and was first mined commercially in this area about 1860. By 1909 its total production exceeded that of lead. Except for a spurt during World War I, zinc production then fell off, none being reported in 1931-1939.

A free copy of Report of Investigations 4386, "Investigation of Royal Princess Zinc-Lead Deposit, Jo Daviess County, Ill.," by Stephen P. Holt, may be obtained from the Bureau of Mines, Pittsburgh 13.

Hits Peak of 853,000 Tons of Steel Ingots

Oakland, Calif.

• • • **A record-breaking** 853,000 tons of steel ingots were produced at the Fontana plant in 1948, Mr. Henry J. Kaiser announced recently. This was a substantial increase over the previous record of 796,000 tons attained in 1947. Shipments of finished steel products from Fontana totaled 615,000 tons. These records were made, Mr. Kaiser pointed out in his year-end statement, despite the fact that the Fontana blast furnace, after running for 5½ years and producing over 2 million tons of pig iron, was shut down for relining in late summer of 1948 for a period of 63 days.

On Dec. 24, the first heat of ingots was tapped from the new seventh openhearth. With this additional steelmaking furnace in operation, it is anticipated that steel ingot production in 1949 will top 1 million tons.

The completion of the Eagle Mountain railway made it possible

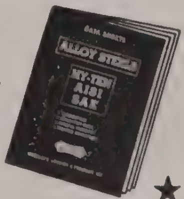
OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

"I'd recommend SPECIAL HY-TEN alloy steel"
"I'd recommend STANDARD A.I.S.I. steel"
"WHEELOCK, LOVEJOY supplies them both"

The selection of alloy steel grades necessarily varies with each manufacturer's needs and opinions. Some prefer HY-TEN alloy steel, while others recommend standard A. I. S. I. steel. However, differences in choice need not mean different sources of supply . . . just contact the Wheelock, Lovejoy warehouse nearest you. There you will find all grades of HY-TEN alloy steel as well as standard A. I. S. I. . . . grades to meet every need and opinion. By dealing with Wheelock, Lovejoy, you have the advantage of prompt delivery from a nearby source, plus courteous help from men who know metallurgy.

WL *steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability—thus eliminating costly changes in heat treating specifications.*

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.



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BILLETS AND FORGINGS FOR PRODUCTION, TOOL ROOM AND MAINTENANCE REQUIREMENTS.

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FINE GEARS MADE TO ORDER

SPUR • HELICAL • HERRINGBONE • SPIRAL BEVEL • STRAIGHT BEVEL • HYPOID • ZEROL • WORMS and WORM GEARS • SPLINED SHAFTS • DIFFERENTIALS

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A BETTER PRODUCT. Finest production facilities, advanced engineering practice, and a highly trained organization of skilled craftsmen stand back of the Fairfield reputation for producing fine gears and differentials!

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For FINE GEARS

A WATCH OR A PRINTING PRESS NEEDS PERMANENT ALIGNMENT and GRAND RAPIDS GRINDERS deliver continuous micro-accuracy*

The micro-accuracy of Grand Rapids Grinders comes, in part, from Gallmeyer & Livingston's unique method of making massive, one-piece column and base castings of close-grained gray iron . . . achieving vibrationless rigidity and permanent alignment between cross-travel ways and vertical head ways.

Other assurances of long-life accuracy in Grand Rapids Grinders include: patented vertical head adjustment; flanged type, pre-loaded ball bearing spindle; and the fastest longitudinal table speed available in any grinder.

*Accuracy within 0.00025 limits

To serve you — *Your inquiry concerning your specific grinding needs will receive prompt attention. Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Grinders, Hand Feed Surface Grinders, and Combination Tap and Drill Grinders.*

GALLMEYER & LIVINGSTON COMPANY
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GRAND RAPIDS GRINDERS

for Fontana to draw iron ore from the vast Eagle Mountain deposit 164 railroad miles from Fontana. Delivered ore costs at Fontana are now among the lowest in the country, Mr. Kaiser stated.

Among the new facilities which will be completed at the Kaiser Steel plant during 1949 is an additional slab heating furnace which will permit an augmented plate output. Construction of facilities at Fontana to produce hot-rolled sheets up to 78 in. wide with a minimum of 14 gage thickness is well under way.

The new mill is expected to produce 100,000 tons a year of both coils and flat sheets for heavy sheet metal work, barrels, oil and domestic water tanks, pipe, auto frames, and a host of like fabricated articles. Likewise, the year 1949 will see the first production from the new electric weld pipe mill being constructed at Fontana, capable of producing 100,000 tons a year of steel pipe from 5 in. to 14 in. in diameter.

Scrap Inventories Seen Far From Adequate

Washington

• • • **Present scrap** inventories still are far from adequate, Secretary of Commerce Sawyer warned recently.

Even though current inventories are 1,000,000 tons more at present than a year ago, daily scrap consumption also has increased, Mr. Sawyer pointed out in cautioning the trade against over-optimism in evaluating scrap inventories.

The demands of the domestic economy, foreign aid programs, and military requirements must be taken into account in forecasting future demand, he said.

"Current inventories of purchased and home scrap are estimated at about 5,000,000 tons and, at a scrap consumption rate running approximately 2,500,000 tons a month, these inventories represent no more than a 60-day supply.

"Such a supply would be inadequate in the event of any emergency," he declared.

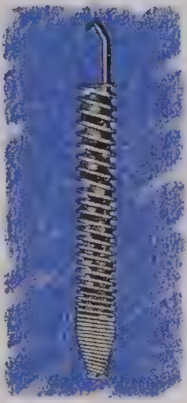
Because of the mild winter experienced east of the Mississippi, scrap is moving and is not accumulating at sources of supply, he pointed out. Consequently, the over-winter backlog will be considerably less in the spring than it would have been.

FOR BEST RESULTS USE THE

Udylite BRIGHT ZINC PROCESS

COMPLETE STOCKS OF ALL SUPPLIES—HIGH QUALITY PLATING AT LOW COST

Exclusive Ball Anode Container Saves on Salts



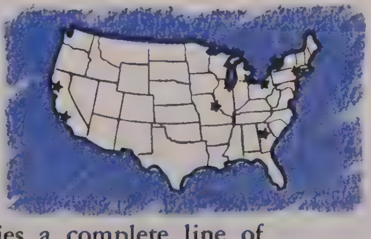
The Udylite Ball Anode Container is specially designed to prevent scrap from dropping to the bottom of the tank. Even the smallest ball anode scraps are kept "in action" until completely used. Thus, the metallic content of the bath is maintained at a uniform level—minimizing costly salt additions.

Udylite Ball Anodes provide a constant, maximum anode area which prevents sludge accumulation. As the anodes are used up, new ones are added at the top.

High-Efficiency Brighteners

Udylite Brightener Agents are highly effective in producing the proper grain refinement for brighter zinc deposits. They are specially prepared to have stability in the plating bath, insuring full effectiveness over a long period. Udylite Brightener Agents are quickly and easily added to the plating bath.

Coast-to-Coast Stocks of Prepared Zinc Salts



Udylite maintains complete stocks of prepared Zinc Salts to fill your needs promptly, and prevent costly delays or process interruptions. Udylite also carries a complete line of platers' supplies—from rubber gloves to anodes, chemicals, and a complete line of plating equipment. All supplies are laboratory tested for your protection.

PIONEER OF A BETTER WAY IN PLATING

Let Us Help You On Any Plating Problem

Remember, Udylite Technical Men are at your service at all times to help you on any plating problem whatever. There is no obligation or cost. If current shortages have necessitated certain changes in your plating operations, our Technical Staff will be glad to study your processes, and make recommendations for top plating efficiency, excellent finishes, fast output, and minimum plating costs. Just address a letter to us, describing your process, and the results you want . . . and let us furnish you with detailed recommendations. Write *today*.

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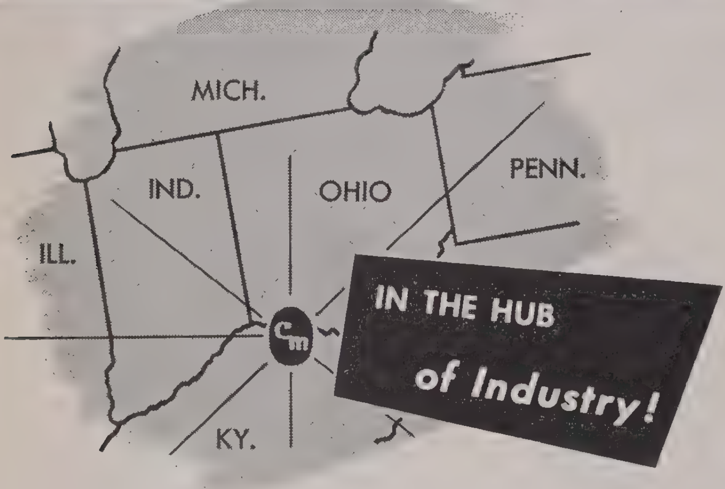
Udylite
CORPORATION

DETROIT 11, MICHIGAN

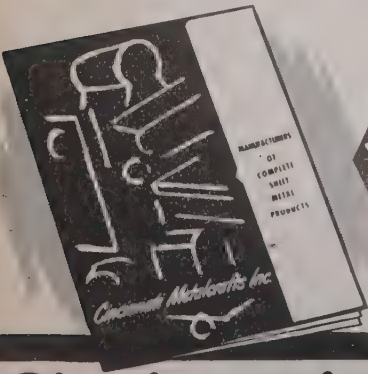
WE HAVE MANUFACTURING FACILITIES

Located for YOUR advantage!



STRATEGETICALLY located from the standpoint of supply, labor and shipping, we are ideally suited to meet metal working problems in many fields. We are contract manufacturers and will produce your products, from your blue prints and specifications, at a fixed price. Then, we will ship as scheduled, directly to you or drop-ship to your customers.

Whether you are a manufacturer needing additional production capacity or a sales organization requiring manufacturing facilities, our company's knowledge of metal working will be invaluable to you. Write, wire or phone—find out how we can serve you in turning out complete products or component parts. The complete facilities we offer consist of Sheet Metal Fabricating—20 gauge to ¼″ Plate, Machine Shop, Metal Spinning and Finishing to 14 gauge.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Our catalog will be sent upon request. It illustrates our various operations and shows what we have done for others.

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Nooter Boiler Works Co. Lists Expansion Program

St. Louis

• • • **Completing** its $500,000 expansion program, The John Nooter Boiler Works Co., St. Louis, has purchased major items of equipment out of the Mount Vernon, Ill., plant of J. P. Devine Div. of H. K. Porter Company, Inc., Pittsburgh. Together with other new equipment recently installed or now on order, it provides facilities for fabricating the larger types of tanks and heavier pressure vessels used by petroleum, chemical, foods processing and other industries.

New buildings in the Nooter expansion are adding 50,000 sq ft of shop space. Part of a new heavy fabrication shop already is in use, and the balance is nearing completion. A new shop and office for the company's metallizing division, and a building for tube storage soon will be ready for occupancy.

Buildings recently completed include a metallurgical laboratory for testing welds and metals and for developing new techniques, an engineering office, a maintenance shop and a warehouse for equipment used by field crews in tank and smokestack erection.

Plans call for a new oxygen supply installation and an acetylene generation plant to accommodate increased welding and flame-cutting operations. Rail spurs add 1200 feet of trackage for loading within the 8-acre plant area.

1948 New Home Units Top 1947 by 9 Pct

Washington

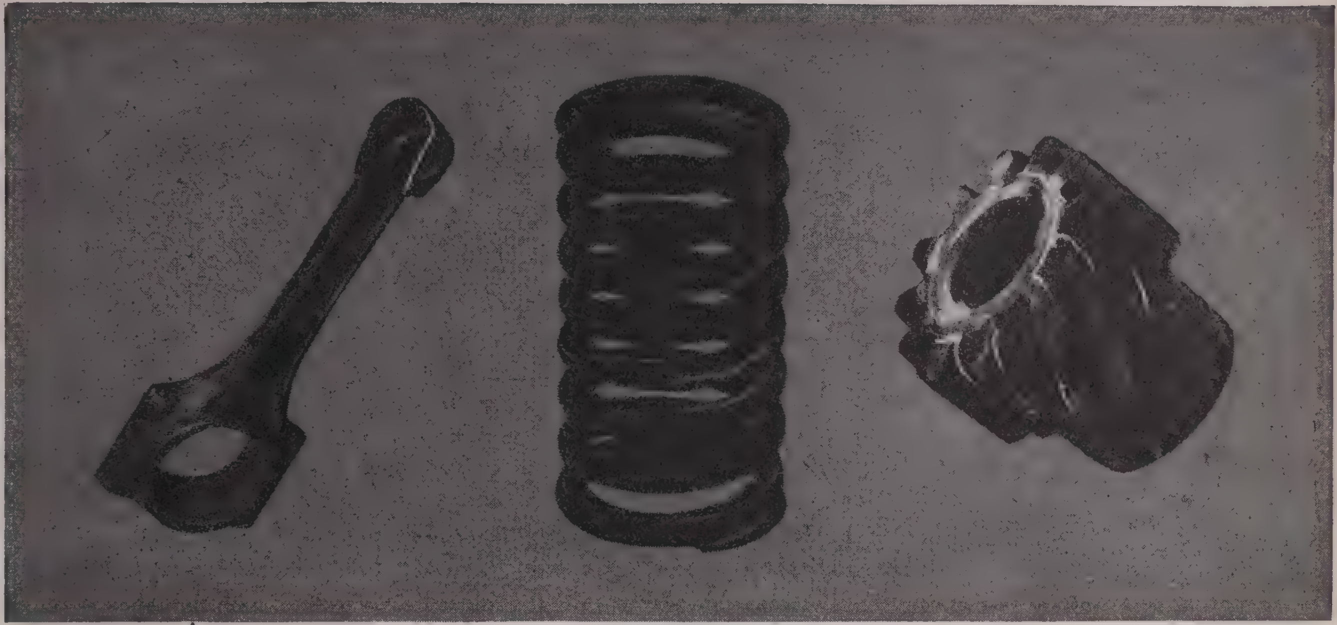
• • • **Preliminary figures** compiled by the Bureau of Labor Statistics indicate that 927,000 new permanent nonfarm dwelling units were started during 1948.

This is but about 1 pct less than the record-breaking 937,000 units put under construction in 1925 and 9 pct more than the number of starts in 1947.

Government forecasters are not overly optimistic for 1949 unless Congress passes housing legislation which would give home-building a sharp boost. Costs have been rising. The monthly totals for new starts have declined steadily from the peak of 99,400

5 Kinds of

TROUBLE YOU DON'T HAVE TO HAVE



Illustrations show how Magnaflux clearly indicates surface and sub-surface cracks and other defects.

When You Inspect with MAGNAFLUX*

YOU Eliminate or Reduce

1. **TROUBLE due to excessive scrap in production.**
2. **TROUBLE from high rate of rejections for defects at final inspection.**
3. **TROUBLE with particular operations, operators, or processes.**
4. **TROUBLE with good-will-losing customer returns.**
5. **TROUBLE due to failure of parts in service.**

With proper inspection by Magnaflux at *early* steps in production you can cut manufacturing costs as well as eliminate these five kinds of trouble.

When you inspect at various stages of your operations, you keep your finger on the pulse of production. You catch defective parts *before* additional money is wasted in machining and finishing time. You can single out a process causing defects, and correct it.

Automatic machines for volume production lines enable you to inspect by Magnaflux at low cost. Magnaflux, and other Magnaflux Corporation non-destructive testing means, make fine cracks and other discontinuities readily visible. The non-visible defects such as cracks in castings, seams in bar stock, or laps in forgings are marked by easily seen indications of bright color, or can be made fluorescent under black light. *Every part* can be economically inspected, or sampling inspection used when desired.

Write today for full information on how Magnaflux can help you raise product quality and cut production costs.

**Magnaflux, Reg. U. S. Pat. Off., a trade mark of Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.*

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MICRO MATIC
6 NEW MODELS
TRADE

Productively Generate
SURFACE FLATNESS

MICROFLAT MACHINES

This cast iron valve plate for a refrigeration unit is finished on a double surface Microflat Machine to 8-microinch r.m.s. finish—optically flat and both sides parallel within 0.0001-inch. Production rate is 20 pieces per minute.

FINISH flat surfaces, on any material from soft copper to quartz or nitralloy, regardless of the shape or size of the part, in high production. Opposite sides of one or many parts are finished simultaneously on double surface machines,—productively produced to one light band of flatness and within one microinch r.m.s. surface finish. Recessed surfaces may also be finished on single surface machines.

Let us send more information at your request.

MICROMATIC HONE CORPORATION
8100 SCHOOLCRAFT AVENUE, DETROIT 4, MICHIGAN

DISTRICT FIELD OFFICES:
1323 S. Santa Fe, Los Angeles 21, California
616 Empire Bldg., 206 S. Main St., Rockford, Ill.
55 George St., Brantford, Ont., Canada
Micromold Manufacturing Div., Boston Post Road, Guilford, Conn.

for May to 56,000 in December—2800 less than for December 1947.

As it stands now, pending possible new housing measures, the government sees scarcely more than about 880,000 new dwelling units started next year. This figure includes 30,000 family units built with public funds.

Although costs continued to rise in 1948, the increase was neither so great nor so fast as in 1947 when costs zoomed by 34 pct. Cost increase in 1948 was about 8 pct.

A changing pattern was noted in passing. At the beginning of 1948, rental housing (two or more family structures) accounted for only about 13 pct of all starts; by December, this had risen to 17 pct for the year. However, this is still considerably below the 40 pct rate of the late twenties.

New York and Los Angeles led all American cities in the number of permits issued as well as showing increases over 1947. Both Philadelphia and Washington issued fewer home-building permits last year than in 1947. However, gains registered by nearby suburbs more than offset the decrease for the cities proper.

Shipbuilding Gets a Lift

Seattle

• • • **The long-inactive** shipyard business in Seattle received a faint spark of life last week. The Todd Shipbuilding Corp. here was low bidder on a Maritime Commission job which calls for two steamships to be converted into transports.

Work will start sometime this month on the \$1¼ million contract, although yard officials don't have any definite fix on the date, and will continue for 3 to 4 months. It will mean new jobs will be created for this period for several hundred men.

The two steamships, Sea Star and Sea Flier, will be purchased by the Luckenbach Steamship Corp.

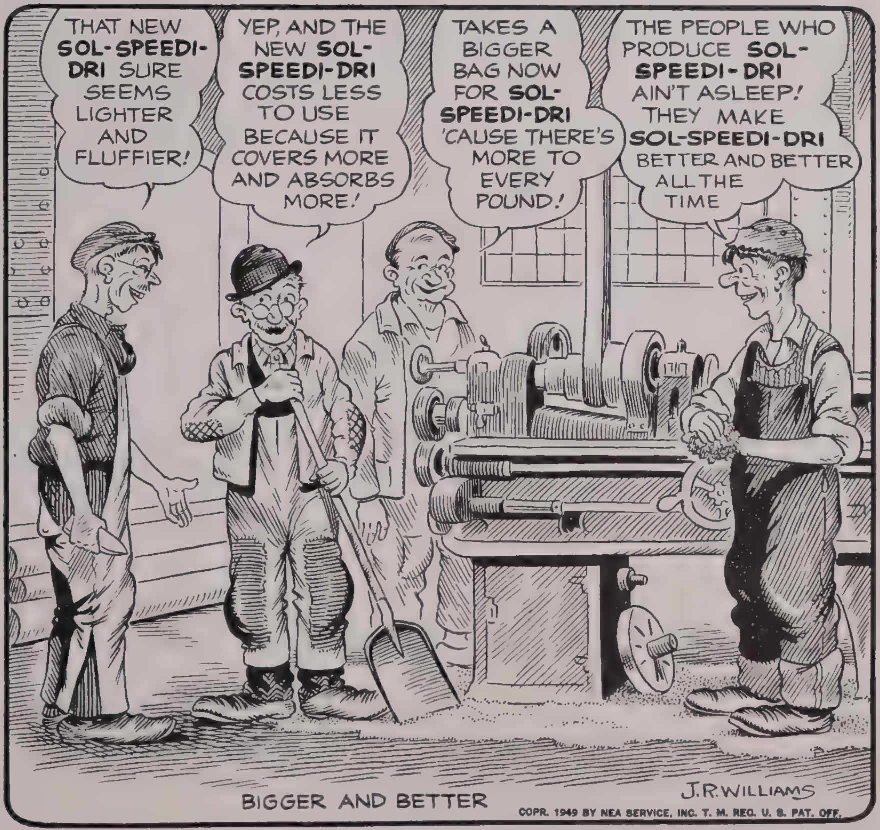
If the past 2 month's efforts to bring more shipyard business onto the Pacific Coast produce results, union and yard officials are hopeful that the men who will be called to work at Todd on this new job will have continuous employment.

ANNOUNCING

THE

NEW

IMPROVED SOL-SPEEDI-DRI



OUT OUR WAY

THAT NEW **SOL-SPEEDI-DRI** SURE SEEMS LIGHTER AND FLUFFIER!
YEP, AND THE NEW **SOL-SPEEDI-DRI** COSTS LESS TO USE BECAUSE IT COVERS MORE AND ABSORBS MORE!
TAKES A BIGGER BAG NOW FOR **SOL-SPEEDI-DRI** 'CAUSE THERE'S MORE TO EVERY POUND!
THE PEOPLE WHO PRODUCE **SOL-SPEEDI-DRI** AIN'T ASLEEP! THEY MAKE **SOL-SPEEDI-DRI** BETTER AND BETTER ALL THE TIME
BIGGER AND BETTER
J.R.WILLIAMS
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NEW SOL-SPEEDI-DRI
Gives You *More Volume* Per Pound

NEW SOL-SPEEDI-DRI
Covers More Floor Area Per Pound

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Absorbs More Liquids Per Pound

WRITE FOR THE FACTS!

Yes, Sol-Speedi-Dri — the new, improved Sol-Speedi-Dri — is here! And it is more economical to use than ever before, because you get more bulk, more coverage, more absorption, per pound.

WHEN YOU BUY, BE *SURE* IT'S SOL-SPEEDI-DRI!

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THE ORIGINAL ABSORBENT FOR ALL LIQUIDS

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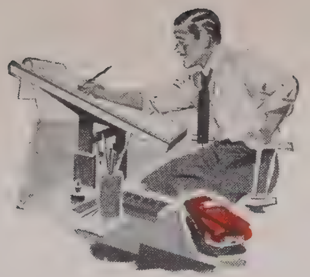


Step out front in the Product Parade

You're off to a flying start—right from the drawing board—when design "specs" call for *pre-coated* Thomas Strip for metal parts.

This versatile, ready-to-use strip steel sparks many a design improvement and production short-cut. And, it extends the economy of steel to many parts once made with more costly metals—while maintaining all utility and appearance advantages. Uniform Thomas electrocoatings function either as the final finish, or as a ready base for further plating or painting.

Whatever your product, *pre-coated* Thomas Strip can inspire dozens of new ideas for improving quality and cutting costs. Available coatings and types are listed below.

THE THOMAS STEEL COMPANY • Warren, Ohio

Specialists in Cold Rolled Strip Steel

COLD ROLLED STRIP STEEL

Electrocoated with Zinc, Copper, Nickel and Brass • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Spring Steel • Alloy Strip Steel, S.A.E. Grades • Produced to Your Specifications

Thomas Strip

FOR BETTER PRODUCTS . . .

FASTER . . . AT LOWER COST

New Methods for Making Light Aggregate Related

Washington

• • • **Development** of new and efficient methods for the production of lightweight concrete aggregate from clays, shales, slates, coal-mine wastes, and other mineral materials is described in a recent publication released by the Bureau of Mines after an intensive study conducted by the Bureau.

Use of lightweight aggregates in constructing large concrete and steel buildings means a saving of steel at times when steel is hard to obtain, according to the Bureau. The lighter weight of the concrete makes possible the use of less steel. Considered better suited to withstand the shock of earthquakes than standard concrete, lightweight concrete also can be used to build extra stories on buildings, which cannot support the additional weight of standard concrete and essential reinforcing steel.

Conducted by the Metallurgical Div. of the Bureau, tests were made in small, electrical and gas-fired furnaces and in gas and oil-fired rotary kilns. Aggregate samples also were tested by the Bureau of Standards for strength and other qualities.

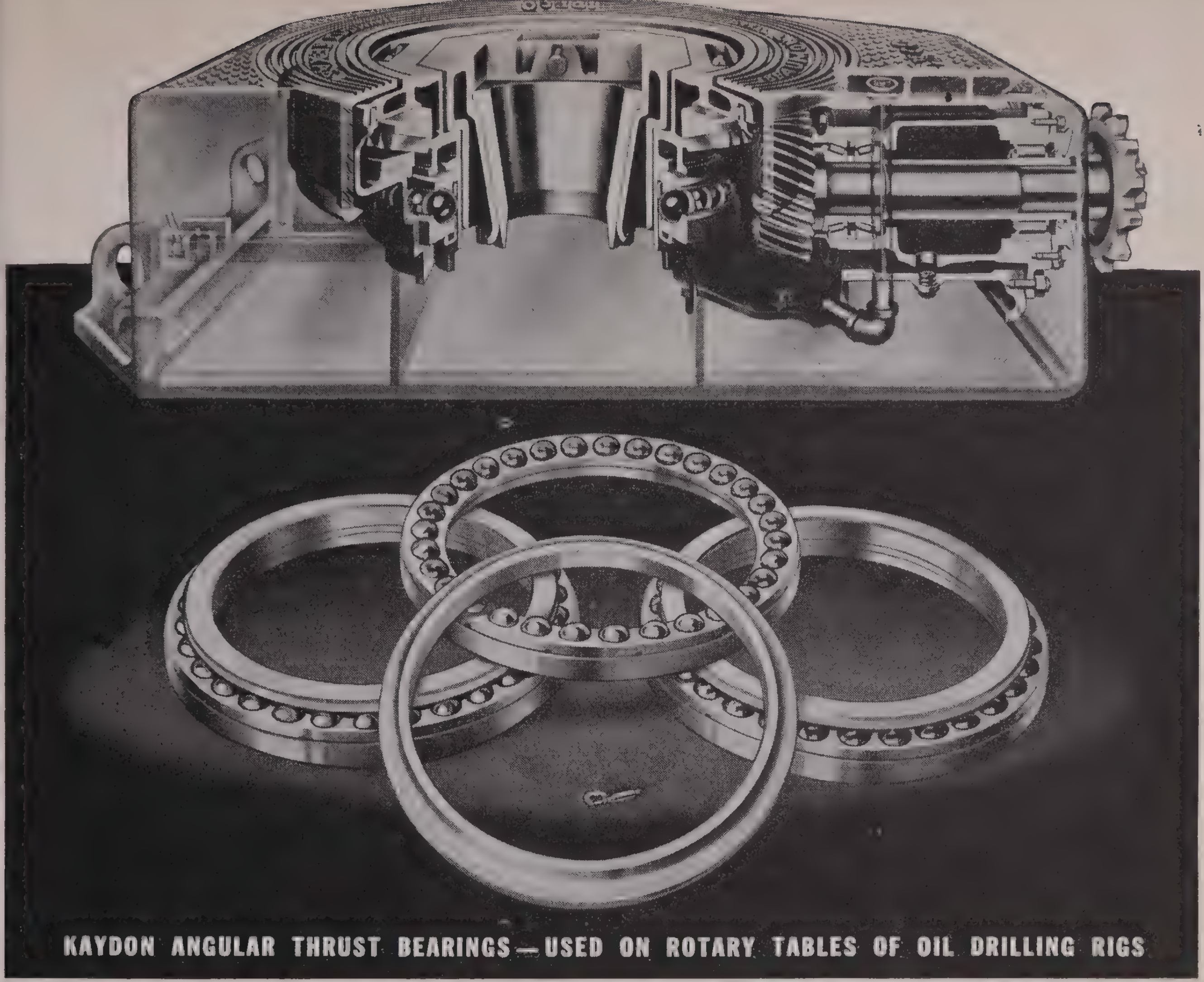
Studies Clay Deposits

Washington

• • • **A study** of clay deposits in north-central Kansas, undertaken by the Bureau of Mines in 1943 as part of the wartime mineral development program, is described in a publication recently released.

In 1943, the bureau investigated an area about 40 to 120 miles in extent and trending northeasterly from the vicinity of Ellsworth to the Nebraska state line, drilling 143 hand auger holes, excavating 26 trenches and 2 test pits. While individual clay beds in the Dakota formation have a reported alumina content ranging 37 pct to less than 20 pct, the analyses of the samples indicated *an average alumina content of 21 pct.*

A free copy of the Report of Investigations 4379, "Central Kansas Clay Deposits," may be obtained by writing to the Bureau of Mines, 4800 Forbes St., Pittsburgh 13.



KAYDON ANGULAR THRUST BEARINGS—USED ON ROTARY TABLES OF OIL DRILLING RIGS

CONTACTING KAYDON was the RIGHT IDEA for IDECO*

*International Derrick & Equipment Co. — One of the Dresser Industries

No manufacturer of heavy-duty machinery can afford to compromise on bearings, the very heart of efficient operation ... particularly in powerful oil field rotary tables where the tremendous loads demand super-rugged, high precision bearings.

IDECO is one of many of America's outstanding machinery builders who find **KAYDON** Bearings are right! On the 14½" IDECO Rotary Table for Drilling Rigs 22.750" OD bearings are used . . . the 17¼" IDECO Streamlined Rotaries use bearings 29.250" OD . . . the 23", 36.000" OD bearings . . . the 27½", 39.625" OD bearings . . . big, rugged, but smooth and reliable in performance as a fine watch movement!

Other heavy machinery engineers also find it's the right idea to "Contact **KAYDON**" for bearings that more than meet the demands of steel mill and paper mill machinery, excavators, loaders, cranes, hoists, crushers, food processing and all types of heavy-duty equipment.

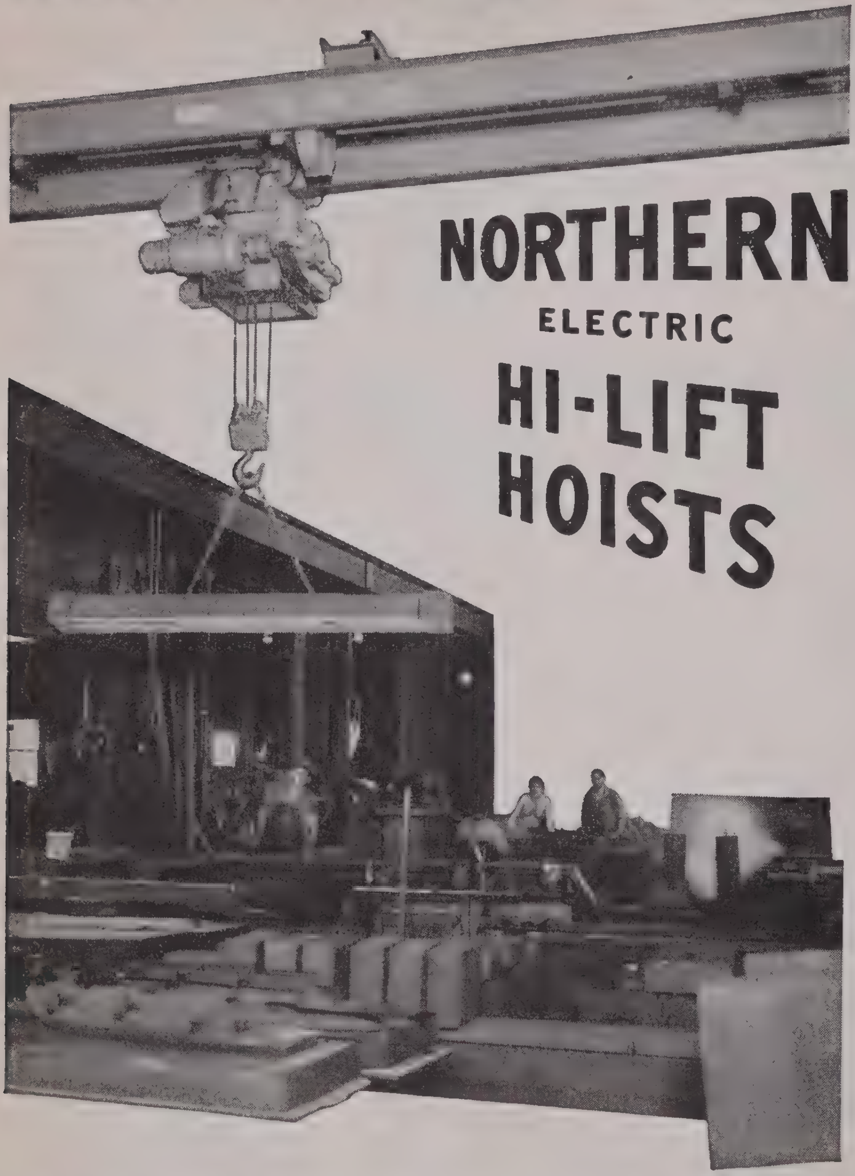
KAYDON *Types of Standard or Special Bearings:*

Spherical Roller
Taper Roller
Ball Radial
Ball Thrust
Roller Radial
Roller Thrust

Counsel in confidence with **KAYDON**. Capacity now available for all sizes and types of **KAYDON** Bearings.

THE KAYDON ENGINEERING CORP., MUSKEGON, MICH.

All types of Ball and Roller Bearings 4" bore to 120" outside diameter



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Neat stacking of work, free straight aisles, cleaner floors, orderly arrangement of work for better visibility and supervision, means better foundry or shop efficiency. MECHANIZE with LABOR SERVING NORTHERN ELECTRIC HI-LIFT HOISTS to make good housekeeping easier.

★ Let us send Bulletin No. 135-H ★

OVERHEAD ★ ELECTRIC CRANES ★ AND HOISTS ★

NORTHERN
ENGINEERING WORKS
2615 Atwater St., Detroit 7, Mich.

Use Electrostatic Field In New Painting Process

Indianapolis

• • • **Now you can** paint automatically without even aiming your paint gun directly at the area to be covered.

In addition to substantial labor savings, engineers for the Ransburg Electric Coating Corp. of Indianapolis who have developed the new process claim savings up to 50 pct in the amount of paint required and better deposition of the paint.

Ransburg Electro-Spray creates an electrostatic field in the spray booth by means of fine wire electrodes. As the finely atomized paint is introduced into the coating zone, the paint particles are charged negatively. Thus charged, they are attracted to the positively charged articles on the conveyer.

The process can also be used to remove excess paint at drain-off points.

Ransburg engineers contend that "overspray" is minimized since the paint particles that miss the part will actually turn back 180 degrees and be effectively deposited.

According to Harold Ransburg, inventor of the process, Electro-Spray is highly effective in painting shielded areas. Included in a growing list of installations are Norge and Servel, Inc., and the Studebaker plant at South Bend which has a pilot line for spraying large metal parts.

Engineers Find Rust Has Possibility as Insulator

Pittsburgh

• • • **Because rust** is a good electrical insulator, Westinghouse Electric Corp. engineers about 3 years ago began to investigate uses to which it could be put to use.

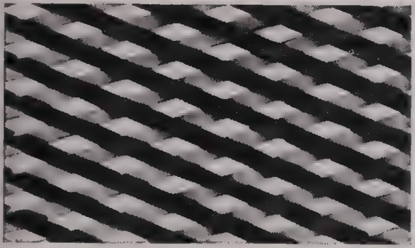
One possibility was as an insulator between the iron laminations of motors and generators. It was satisfactory, but considerable difficulty was encountered in obtaining uniform results.

Recently materials engineers discovered the reason—the coatings were not of the same iron composition even though no difference was apparent to the naked eye. Being of different composition, the oxide coatings naturally had different resistances. The reason for the nonuniformity was

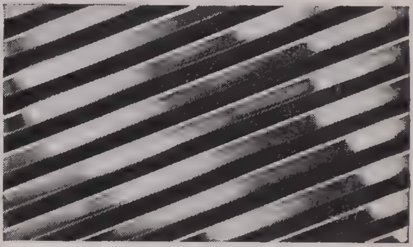
Paradise *for* Designers

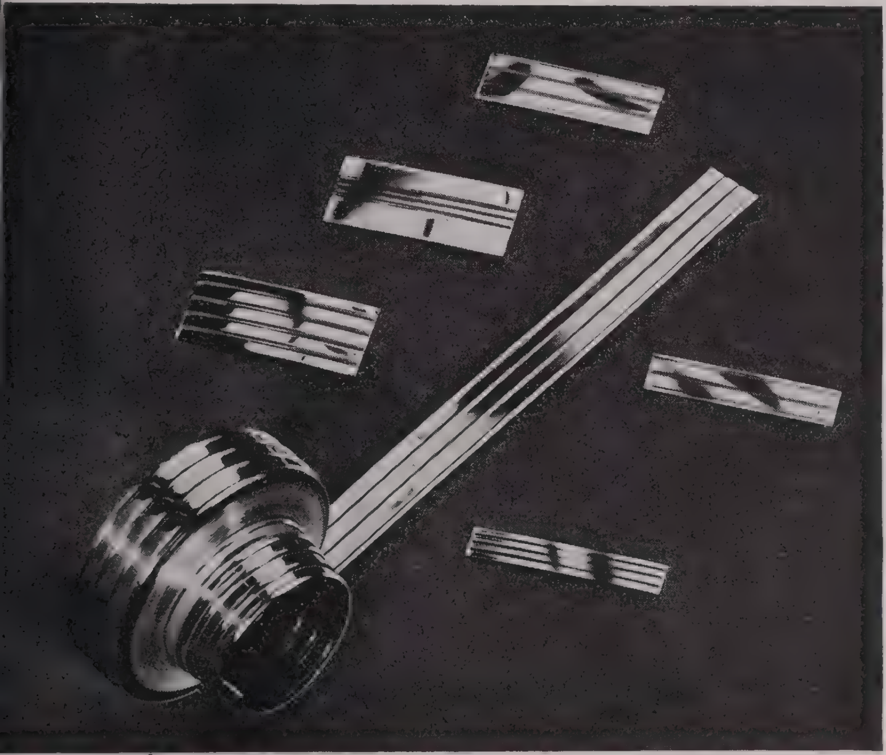
☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

NICKELOID PRE-PLATED METALS SHOWN IN GREAT ARRAY OF PATTERNS, FINISHES


Nickeloid Metals Diamond Crimp

Nickeloid Metals Horizontal Crimp


Nickeloid Metals Diagonal Crimp


The new embossed design shown here in several interesting variations. Design can be embossed (raised) or intaglio (depressed).

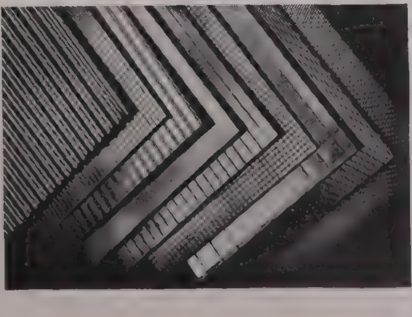
Send for our New

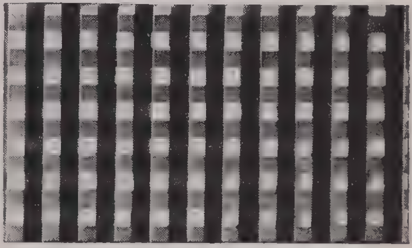
Sampler

Containing actual metal samples of many of the finishes and patterns which are available.

AMERICAN
NICKELOID
COMPANY
PERU 2, ILLINOIS

A few of the gleaming, interesting patterns in Nickeloid Metals which the product designer can adapt to his needs.




Nickeloid Metals Square Crimp

Product designers need not be limited to the use of unrelieved bright surfaces of plated metals in adapting Nickeloid Metals to trim or functional use in their new designs. These metals are offered in various interesting stripes, crimps, and embossed designs.

Thus, if the product surface to be trimmed is already large and unrelieved, it may be that a beaded trim will brighten the product and relieve the monotony of large, unbroken surfaces. Moreover, patterns many times have a functional use: such as the use of diamond crimp or square crimp to improve diffusion of light (light reflectors) or of heat (room heaters).

Nickeloid Metals are furnished in durable pre-plated finishes of Chromium, Nickel, Brass or Copper in sheets and coils — base metals of steel, zinc, brass, copper, or aluminum. The base metal can be chosen from the standpoint of one or more of the following factors: cost, resistance to heat, rust-resistance, availability, workability.

due to the temperature at which the oxide was formed. Oxides formed above 570°C have low resistance, since FeO is formed at this temperature and subsequently decomposes into free iron and Fe_3O_4.

The lack of uniformity was overcome by a new process of steam oxidation, one in which the annealing and oxidation procedures were combined. The electrical sheet steel was placed in a heat-treating furnace, annealed in the proper atmosphere, then brought down below 570°C for the steam oxidation. Bringing the temperature down below this level assures a more uniform oxide film, and thus renders the sheet steel more suitable for electrical insulation.

The coating thus formed is moisture-proof and burnout-proof, as well as providing a good base for finishing operations. Steel thus coated is suitable for installation in a wide variety of machines and devices from small contactors to traction motors and other large rotating machines.

Freight Traffic Moved On Inland Waterways Set Record in 1948

Pittsburgh

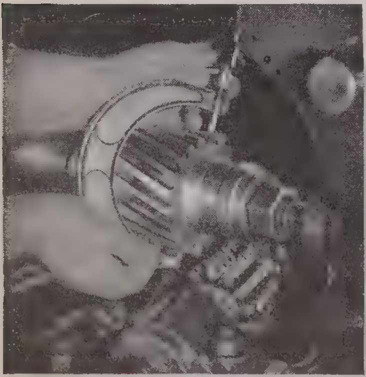
• • • **Last year** is believed to have seen a new record of half a billion tons of freight hauled on the nation's inland waterways. This is the estimate of the American Waterways Operators, national association of private water carriers. Official figures haven't yet been released. The association predicts a 10 to 15 pct gain for 1949.

Some idea of the growing importance of inland waterways transportation can be had from extension on Jan. 11 of the 25,000-ton monthly steel allocation for barge construction and repair. Continuation of this program through August is now assured.

Official approval of this allocation adds weight to the prediction (THE IRON AGE, Aug. 12, 1948, p. 119) that barge shipments of steel out of the Pittsburgh district may double by 1950. This assumes that steel demand remains near present levels.

Dravo Corp., with shipyards at Pittsburgh and Wilmington, Del., is one of the country's big barge builders. At the beginning of this year it had orders for 110 hulls, more than it launched in any prewar year. Since the end of World War II Dravo has constructed and launched 444 hulls, 47 more than it built during the war.

Among new developments in barge design are the integrated types: The first and last units have raked ends while the inner barges have square ends. This reduces turbulence, steps up efficiency. An increasing tendency to design barges for the specific product they'll carry is also reported by Dravo. Wider use of radar to permit towboats to run in fogs is also boosting traffic efficiency on the Ohio and Mississippi Rivers.



MAKE YOUR BLUEPRINTS COME TRUE

. . . with Amgears co-ordinated engineering and manufacturing know-how

We have the designing engineers viewpoint on the importance of strict adherence to blueprints and specifications. The same personal care is given to the production of gears and gear assemblies in our plant that the designer gives to the engineering of the job.

Specifications are studied by our engineers to determine the most efficient economical manufacturing procedure. Sometimes modifications are suggested to achieve greater production economy, but when a contract is accepted the specifications are strictly followed in production.

★ *A qualified sales engineer representing Amgears, Inc., is located near you for personal service* ★ *We invite correspondence on your particular gear problems.*

★ ***We specialize*** . . . in all types of gears and gear assemblies for original equipment.

Gears for construction equipment.
Automotive and tractor gears.
Fine pitch instrument gears.
Gears for farm implements.
Special gears for high speed operation, with shaved or ground teeth.
Miter and bevel gears for mining machinery.
Helical shaved or ground tooth pump gears.
Aircraft engine and airframe gears.

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A SUBSIDIARY OF HUPP CORPORATION
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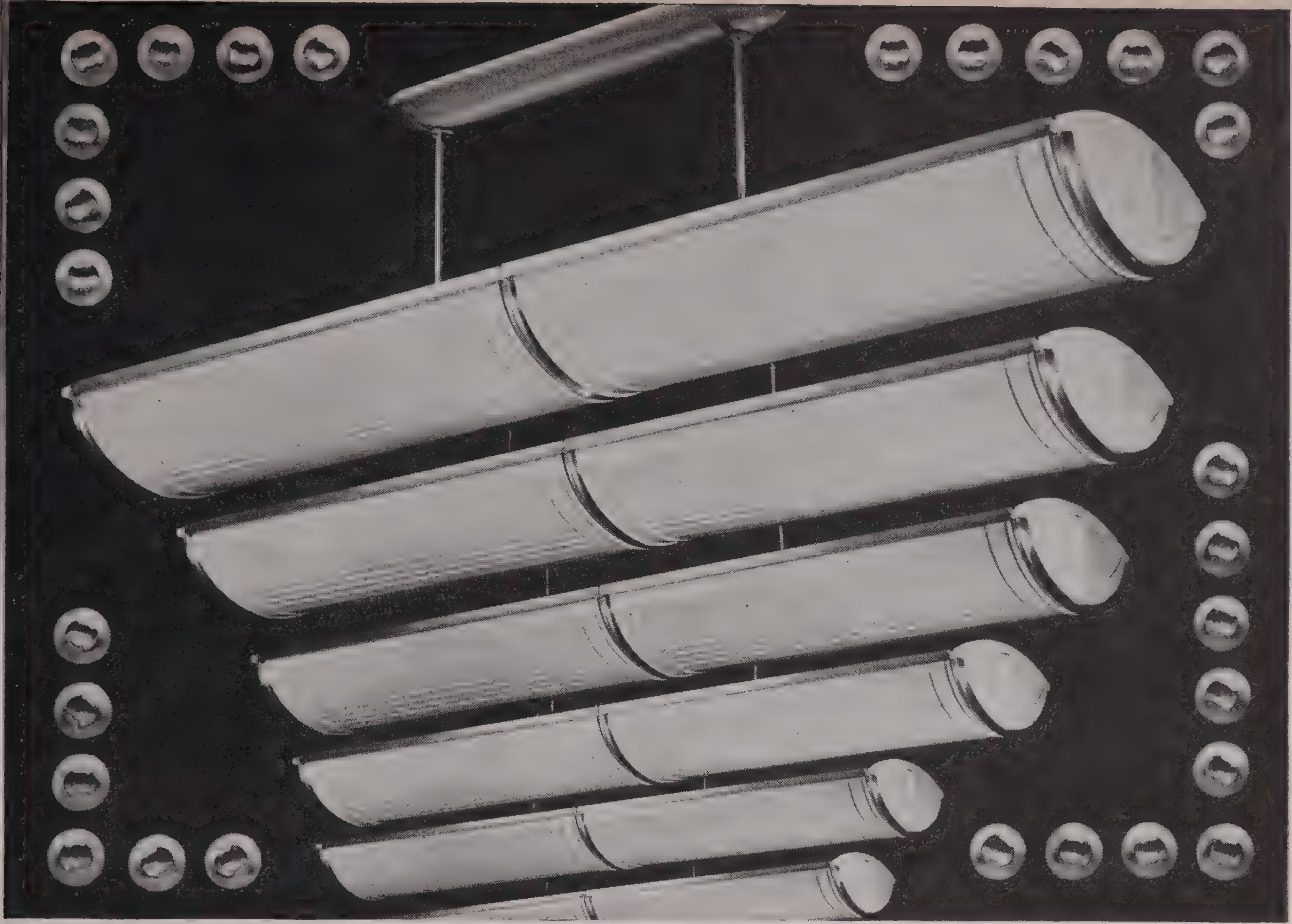
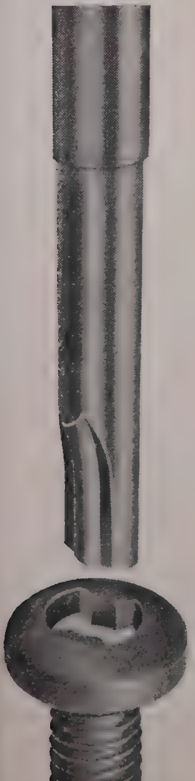


TYPE "A" ASSEMBLY BIT



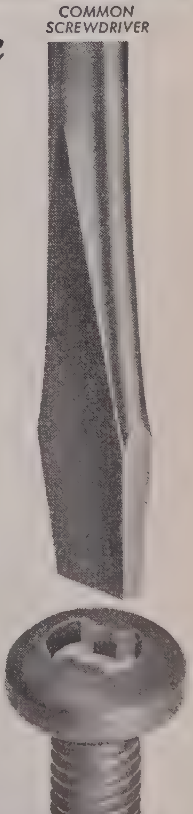
Only CLUTCH HEAD *Could Qualify Here*

At Vermillon, Ohio, where they produce commercial lighting fixtures that compete with daylight, they had their production problems.

The F. W. Wakefield Brass Co. state frankly that they solved these problems by designing three fluorescent models . . . Beacon, Diplomat, and Star . . . for standardization on CLUTCH HEAD Screws. Following experiment and experience with slotted and other types of recessed head screws, the Wakefield people say:—

> "We believe our assembly job would have proved impracticable without CLUTCH HEAD's improved type of screw."
>
> "Use of CLUTCH HEAD immediately saved us 35% in assembly time."
>
> "Previously, damage from driver skidding was *VERY* serious . . . Now we have none."
>
> "The absence of 'ride-out' with CLUTCH HEAD's non-tapered drive means safer as well as easier driving for higher production."
>
> "Today we use only one Type 'A' Bit per week as against 16 previously used with other type screws."
>
> "The Lock-On feature has 2-way importance for us. It simplifies both assembly and field-servicing of our units."

COMMON SCREWDRIVER



Regardless of the nature of your product, you will find in America's Most Modern Screw advantages covering every phase of assembly production . . . for increased output at lower cost through safer, faster and smoother operation. Make your own appraisal of these advantages. Send for package assortment of Sheet Metal, Thread-forming and Machine screws, sample Type "A" Bit, and illustrated Brochure.

CLUTCH HEAD - SCREWS -

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

NOTICE OF SALE
BY
THE ATTORNEY GENERAL
OF
THE UNITED STATES OF AMERICA
OF CERTAIN
STEEL MILL EQUIPMENT
FINAL NOTICE

Final Notice inviting offers to purchase from the Attorney General all of his right, title and interest in and to certain unfinished rolling mill machinery and other unfinished steel products located on the premises of the Mesta Machine Company, Pittsburgh (West Homestead), Pennsylvania, as follows:

Lot 1. **One (1) Motor Driven Billet Shear with Gauge and Back Shear Table. Weight approximately 377,000 lbs., Capacity approximately 475 tons. Estimated to be 97½% complete.**
Minimum price $ 5,739

Lot 2. **One (1) 6-Stand 24.8" Two-high Continuous Billet Mill. Weight approximately 2,223,000 lbs., Capacity approximately 700,000 net tons per year. Estimated to be 97½% complete.**
Minimum price $33,840

Lot 3. **Table Between Finishing Stand, Flying Billet Shear with Pinch Rolls. Weight approximately 315,700 lbs. Estimated to be 90% complete.**
Minimum price $ 4,806

Lot 4. **Four (4) Steel, pressure vessel forgings. Weight approximately 572,000 lbs.**
Minimum price $ 8,708

Lot 5. **One (1) Blooming Mill Roll. One (1) Blooming Mill Pinion. Not completed. Rough forged only. Weight approximately 117,600 lbs.**
Minimum price $ 1,790

Total Weight Lots 1 through 5 approximately 3,605,300 pounds.

Total Minimum price for Lots 1 through 5, as an entirety $54,883

which property was acquired by the Attorney General by virtue of Vesting Order No. 133 dated August 28, 1942 (7 F.R. 7063, September 5, 1942).

Sealed bids addressed to the Office of Alien Property, Department of Justice, Room 264, 101 Indiana Avenue, N. W., Washington, D. C. will be received until 11:00 A.M., Tuesday, February 15, 1949 at which time and place said bids will be publicly opened and declared. **Each bid must be in duplicate and on a Bid Form, together with accompanying affidavit, which will be furnished upon request.** The form provides, among other things, that the offer included in the bid shall be irrevocable until 3:30 P.M., on February 23, 1949.

Bids may be submitted for all of the lots, as an entirety, or for any of the individual lots. No bid for any individual lot will be considered unless it exceeds the minimum price shown above for such lot, and no bid for the five lots, as an entirety, will be considered unless it exceeds $54,883.

The Attorney General reserves the right to reject any or all bids or, at his election, to waive any or all defects in any bid. Bids will be considered only from citizens of the United States or business organizations controlled by American citizens and organized under the laws of the United States or a State or Territory thereof.

A certified, cashier's or banker's check payable to the "Attorney General of the United States" in an amount equal to 10% of the bid price must accompany the bid. The Attorney General's right, title and interest in the property will be conveyed to the successful bidder or bidders by Bill of Sale without any representation, warranty or guaranty, express or implied. Further particulars with respect to the said property and forms for submitting bids may be obtained at the Office of Alien Property at either 120 Broadway, New York, New York or 101 Indiana Avenue, N. W., Washington, D. C.

Dated at Washington, D. C., this tenth day of January, 1949.

Tom C. Clark, *Attorney General*

Metal Industry Furnishes Numerous NAM Officials

New York

• • • **Seventeen executives** prominent in the foundry, metals and mining industries have begun their service as 1949 officers and members of the board of directors of the National Assn. of Manufacturers, following their election at the 53rd annual Congress of American Industry, held in New York City, and sponsored by NAM.

William P. Witherow, president, Blaw-Knox Co., Pittsburgh, was elected an honorary vice-president for life. Elected national vice-presidents were Clarence B. Randall, assistant to the president, Inland Steel Co., Chicago, and Thomas J. Bannan, president, Western Gear Works, Seattle, Wash.

Newly-elected members to the NAM board of directors include C. E. Erickson, president, C. E. Erickson Co., Inc., Des Moines, Iowa; H. P. Bigler, executive vice-president, Connors Steel Co., Birminham, Ala.; Henry B. Neef, president, Gate City Iron Works, Omaha, Neb., and G. F. Coope, president, Potash Co. of America, Carlsbad, New Mexico.

Re-elected to serve as NAM state directors were W. M. Neal, vice - president and secretary, Sloss-Sheffield Steel and Iron Co., for Alabama; John H. Chaplin, president, Veeder-Root, Inc., and Roger E. Gay, president, Bristol Brass Corp., for Connecticut; J. Pat Beaird, president, J. B. Beaird Co., Inc., for Louisiana; N. R. Patterson, president, Patterson Steel Co., for Oklahoma; James D. Francis, president, Island Creek Coal Co., for West Virginia; John T. Whiting, president, Alan Wood Steel Co., and M. M. Anderson, vice-president, Aluminum Co. of America, both for Pennsylvania.

In addition to the directors just elected, Robert M. Gaylord, president, Ingersoll Milling Machine Co., Rockford, Ill., and Charles R. Hook, chairman of the board, Armco Steel Corp., Middletown, Ohio, will continue to be members of the 1949 board.

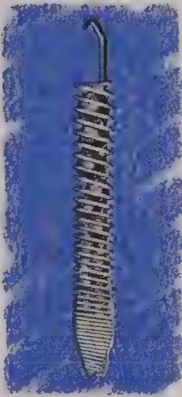
These executives will serve through the coming year as national, regional and state representatives of NAM.

FOR BEST RESULTS USE THE

Udylite BRIGHT ZINC PROCESS

COMPLETE STOCKS OF ALL SUPPLIES—HIGH QUALITY PLATING AT LOW COST

Exclusive Ball Anode Container Saves on Salts



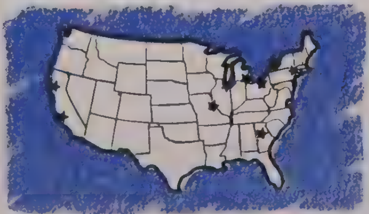
The Udylite Ball Anode Container is specially designed to prevent scrap from dropping to the bottom of the tank. Even the smallest ball anode scraps are kept "in action" until completely used. Thus, the metallic content of the bath is maintained at a uniform level—minimizing costly salt additions.

Udylite Ball Anodes provide a constant, maximum anode area which prevents sludge accumulation. As the anodes are used up, new ones are added at the top.

High-Efficiency Brighteners

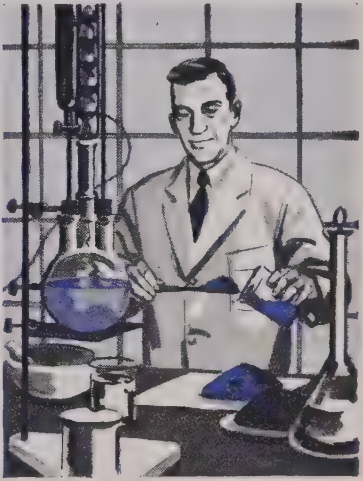
Udylite Brightener Agents are highly effective in producing the proper grain refinement for brighter zinc deposits. They are specially prepared to have stability in the plating bath, insuring full effectiveness over a long period. Udylite Brightener Agents are quickly and easily added to the plating bath.

Coast-to-Coast Stocks of Prepared Zinc Salts



Udylite maintains complete stocks of prepared Zinc Salts to fill your needs promptly, and prevent costly delays or process interruptions. Udylite also carries a complete line of platers' supplies—from rubber gloves to anodes, chemicals, and a complete line of plating equipment. All supplies are laboratory tested for your protection.

PIONEER OF A BETTER WAY IN PLATING



Let Us Help You On Any Plating Problem

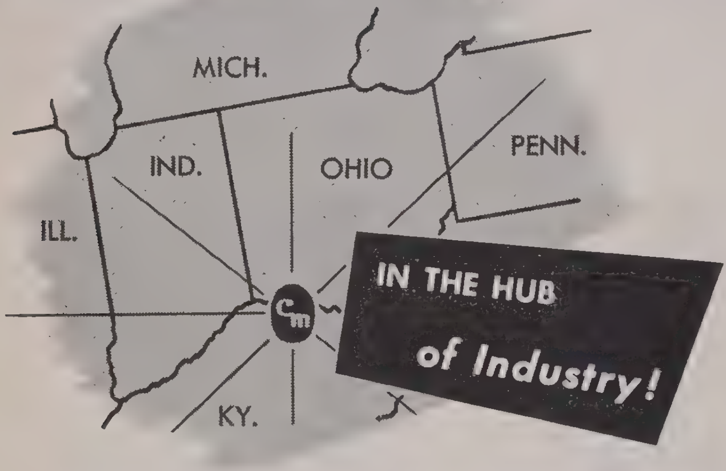
Remember, Udylite Technical Men are at your service at all times to help you on any plating problem whatever. There is no obligation or cost. If current shortages have necessitated certain changes in your plating operations, our Technical Staff will be glad to study your processes, and make recommendations for top plating efficiency, excellent finishes, fast output, and minimum plating costs. Just address a letter to us, describing your process, and the results you want . . . and let us furnish you with detailed recommendations. Write *today.*

THE Udylite CORPORATION

DETROIT 11, MICHIGAN

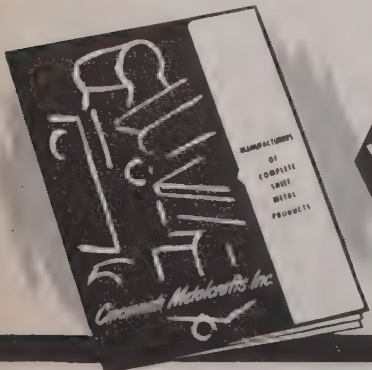
WE HAVE MANUFACTURING FACILITIES

Located for YOUR advantage!



STRATEGETICALLY located from the standpoint of supply, labor and shipping, we are ideally suited to meet metal working problems in many fields. We are contract manufacturers and will produce your products, from your blue prints and specifications, at a fixed price. Then, we will ship as scheduled, directly to you or drop-ship to your customers.

Whether you are a manufacturer needing additional production capacity or a sales organization requiring manufacturing facilities, our company's knowledge of metal working will be invaluable to you. Write, wire or phone—find out how we can serve you in turning out complete products or component parts. The complete facilities we offer consist of Sheet Metal Fabricating—20 gauge to 1/4" Plate, Machine Shop, Metal Spinning and Finishing to 14 gauge.


Manufacturers of complete sheet metal products
Cincinnati Metalcrafts Inc.

Write for Catalogue!

Our catalog will be sent upon request. It illustrates our various operations and shows what we have done for others.

Cincinnati Metalcrafts Inc.
Division A
5000 Brotherton Road, Cincinnati 9, Ohio
Phone: REdwood 2214

Nooter Boiler Works Co. Lists Expansion Program

St. Louis

• • • **Completing** its $500,000 expansion program, The John Nooter Boiler Works Co., St. Louis, has purchased major items of equipment out of the Mount Vernon, Ill., plant of J. P. Devine Div. of H. K. Porter Company, Inc., Pittsburgh. Together with other new equipment recently installed or now on order, it provides facilities for fabricating the larger types of tanks and heavier pressure vessels used by petroleum, chemical, foods processing and other industries.

New buildings in the Nooter expansion are adding 50,000 sq ft of shop space. Part of a new heavy fabrication shop already is in use, and the balance is nearing completion. A new shop and office for the company's metallizing division, and a building for tube storage soon will be ready for occupancy.

Buildings recently completed include a metallurgical laboratory for testing welds and metals and for developing new techniques, an engineering office, a maintenance shop and a warehouse for equipment used by field crews in tank and smokestack erection.

Plans call for a new oxygen supply installation and an acetylene generation plant to accommodate increased welding and flame-cutting operations. Rail spurs add 1200 feet of trackage for loading within the 8-acre plant area.

1948 New Home Units Top 1947 by 9 Pct

Washington

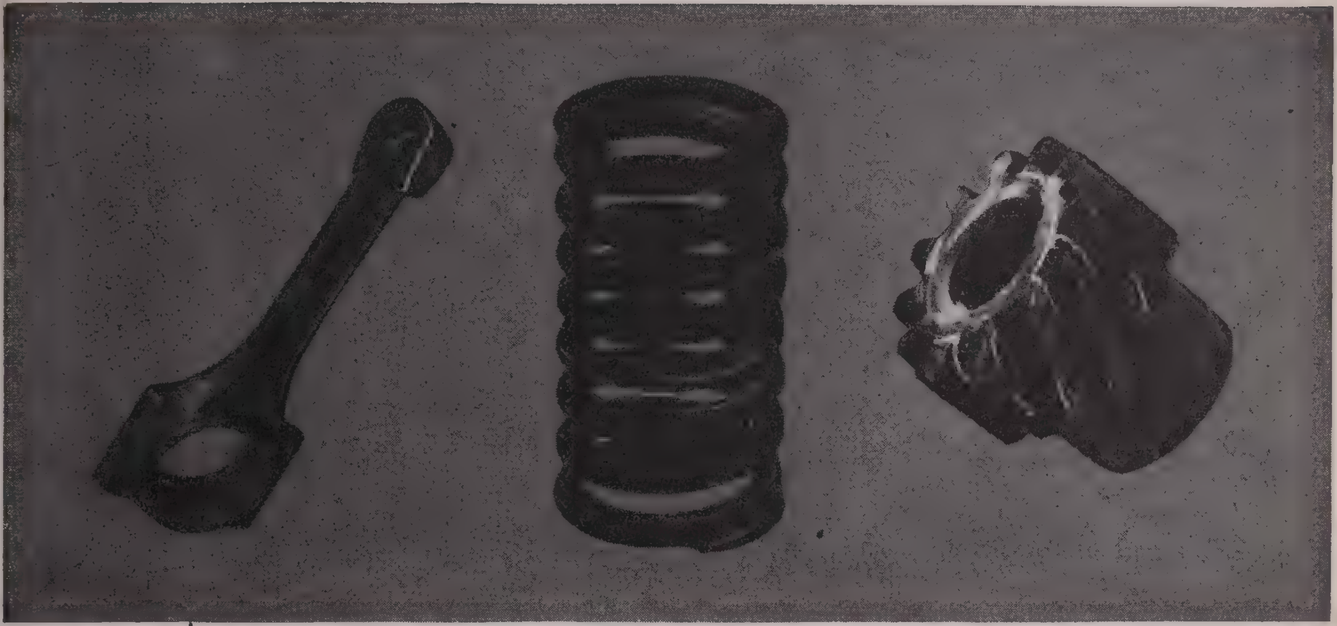
• • • **Preliminary figures** compiled by the Bureau of Labor Statistics indicate that 927,000 new permanent nonfarm dwelling units were started during 1948.

This is but about 1 pct less than the record-breaking 937,000 units put under construction in 1925 and 9 pct more than the number of starts in 1947.

Government forecasters are not overly optimistic for 1949 unless Congress passes housing legislation which would give home-building a sharp boost. Costs have been rising. The monthly totals for new starts have declined steadily from the peak of 99,400

5 Kinds of

TROUBLE YOU DON'T HAVE TO HAVE



Illustrations show how Magnaflux clearly indicates surface and sub-surface cracks and other defects.

When You Inspect with MAGNAFLUX*

YOU Eliminate or Reduce

1. **TROUBLE due to excessive scrap in production.**
2. **TROUBLE from high rate of rejections for defects at final inspection.**
3. **TROUBLE with particular operations, operators, or processes.**
4. **TROUBLE with good-will-losing customer returns.**
5. **TROUBLE due to failure of parts in service.**

With proper inspection by Magnaflux at *early* steps in production you can cut manufacturing costs as well as eliminate these five kinds of trouble.

When you inspect at various stages of your operations, you keep your finger on the pulse of production. You catch defective parts *before* additional money is wasted in machining and finishing time. You can single out a process causing defects, and correct it.

Automatic machines for volume production lines enable you to inspect by Magnaflux at low cost. Magnaflux, and other Magnaflux Corporation non-destructive testing means, make fine cracks and other discontinuities readily visible. The non-visible defects such as cracks in castings, seams in bar stock, or laps in forgings are marked by easily seen indications of bright color, or can be made fluorescent under black light. *Every part* can be economically inspected, or sampling inspection used when desired.

Write today for full information on how Magnaflux can help you raise product quality and cut production costs.

**Magnaflux, Reg. U. S. Pat. Off., a trade mark of Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.*

MAGNAFLUX CORPORATION

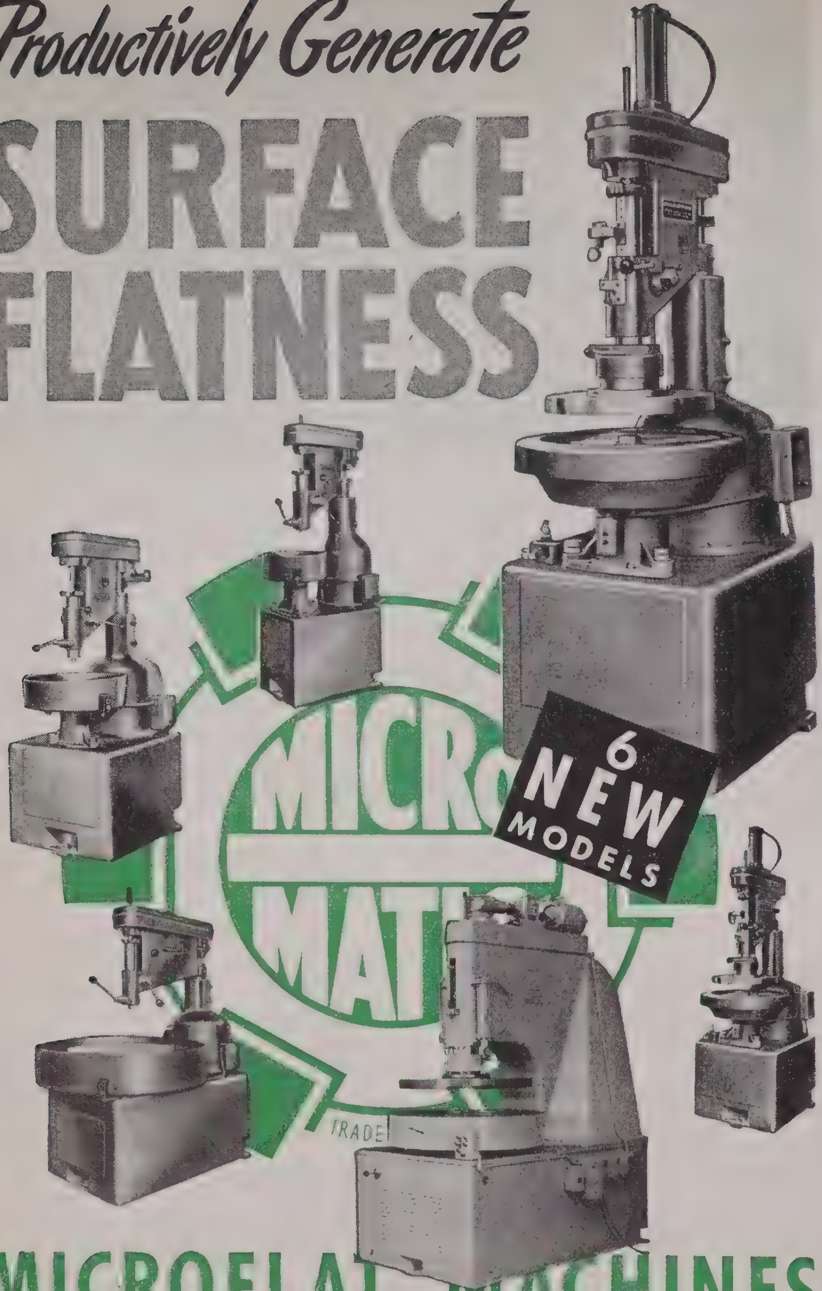
Reg. U. S. Pat. Office

MAGNAFLUX CORPORATION

5902 Northwest Highway, Chicago 31, Illinois

NEW YORK - DETROIT DALLAS LOS ANGELES CLEVELAND

Productively Generate
SURFACE FLATNESS



MICROFLAT MACHINES

This cast iron valve plate for a refrigeration unit is finished on a double surface Microflat Machine to 8-microinch r.m.s. finish—optically flat and both sides parallel within 0.0001-inch. Production rate is 20 pieces per minute.

FINISH flat surfaces, on any material from soft copper to quartz or nitralloy, regardless of the shape or size of the part, in high production. Opposite sides of one or many parts are finished simultaneously on double surface machines,—productively produced to one light band of flatness and within one microinch r.m.s. surface finish. Recessed surfaces may also be finished on single surface machines.

Let us send more information at your request.

MICROMATIC HONE CORPORATION
8100 SCHOOLCRAFT AVENUE, DETROIT 4, MICHIGAN

DISTRICT FIELD OFFICES:

1323 S. Santa Fe
Los Angeles 21
California

616 Empire Bldg.
206 S. Main St.
Rockford, Ill.

55 George St.
Brantford, Ont.
Canada

Micromold Manufacturing Div.
Boston Post Road
Guilford, Conn.

for May to 56,000 in December—2800 less than for December 1947.

As it stands now, pending possible new housing measures, the government sees scarcely more than about 880,000 new dwelling units started next year. This figure includes 30,000 family units built with public funds.

Although costs continued to rise in 1948, the increase was neither so great nor so fast as in 1947 when costs zoomed by 34 pct. Cost increase in 1948 was about 8 pct.

A changing pattern was noted in passing. At the beginning of 1948, rental housing (two or more family structures) accounted for only about 13 pct of all starts; by December, this had risen to 17 pct for the year. However, this is still considerably below the 40 pct rate of the late twenties.

New York and Los Angeles led all American cities in the number of permits issued as well as showing increases over 1947. Both Philadelphia and Washington issued fewer home-building permits last year than in 1947. However, gains registered by nearby suburbs more than offset the decrease for the cities proper.

Shipbuilding Gets a Lift

Seattle

• • • **The long-inactive** shipyard business in Seattle received a faint spark of life last week. The Todd Shipbuilding Corp. here was low bidder on a Maritime Commission job which calls for two steamships to be converted into transports.

Work will start sometime this month on the $1¼ million contract, although yard officials don't have any definite fix on the date, and will continue for 3 to 4 months. It will mean new jobs will be created for this period for several hundred men.

The two steamships, Sea Star and Sea Flier, will be purchased by the Luckenbach Steamship Corp.

If the past 2 month's efforts to bring more shipyard business onto the Pacific Coast produce results, union and yard officials are hopeful that the men who will be called to work at Todd on this new job will have continuous employment.

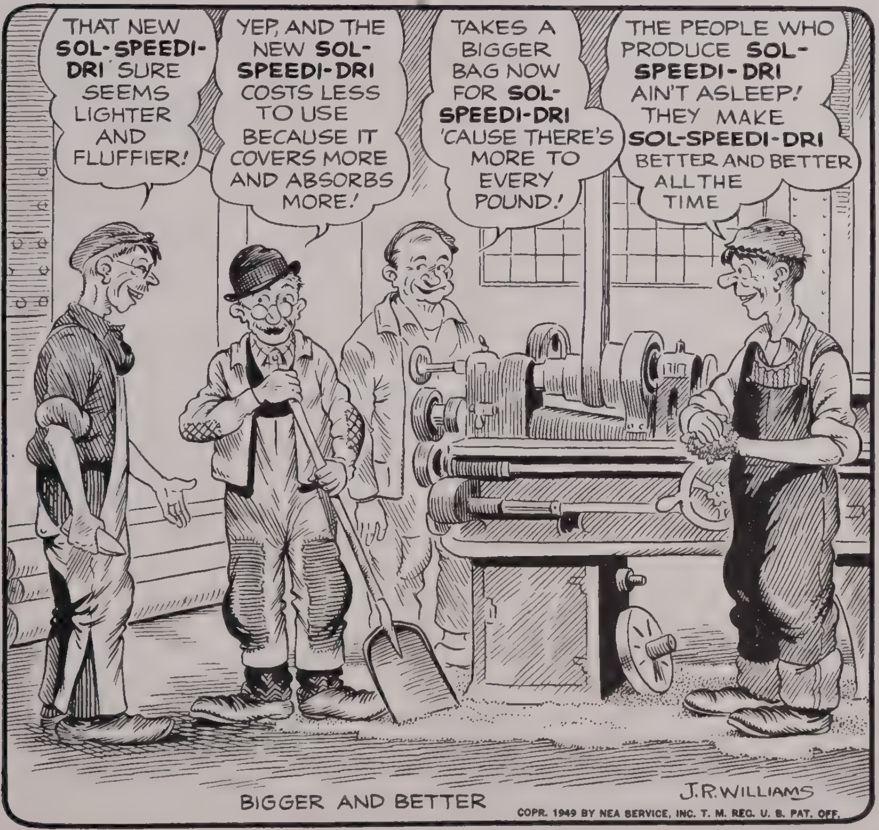
ANNOUNCING

THE

NEW

IMPROVED SOL-SPEEDI-DRI

OUT OUR WAY


THAT NEW SOL-SPEEDI-DRI SURE SEEMS LIGHTER AND FLUFFIER!
YEP, AND THE NEW SOL-SPEEDI-DRI COSTS LESS TO USE BECAUSE IT COVERS MORE AND ABSORBS MORE!
TAKES A BIGGER BAG NOW FOR SOL-SPEEDI-DRI 'CAUSE THERE'S MORE TO EVERY POUND!
THE PEOPLE WHO PRODUCE SOL-SPEEDI-DRI AIN'T ASLEEP! THEY MAKE SOL-SPEEDI-DRI BETTER AND BETTER ALL THE TIME
BIGGER AND BETTER
J.R. WILLIAMS
COPR. 1949 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

NEW SOL-SPEEDI-DRI
Gives You *More Volume* Per Pound

NEW SOL-SPEEDI-DRI
Covers More Floor Area Per Pound

NEW SOL-SPEEDI-DRI
Absorbs More Liquids Per Pound

WRITE FOR THE FACTS!

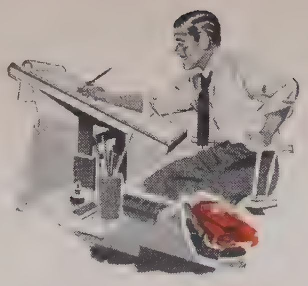
Yes, Sol-Speedi-Dri — the new, improved Sol-Speedi-Dri — is here! And it is more economical to use than ever before, because you get more bulk, more coverage, more absorption, per pound.

WHEN YOU BUY, BE *SURE* IT'S SOL-SPEEDI-DRI!

Safety & Maintenance Co., Inc., 1 Wall Street, New York 5, N.Y. Warehouse stocks maintained in principal cities of the United States and Canada.

SOL·SPEEDI·DRI
THE ORIGINAL ABSORBENT FOR ALL LIQUIDS

LISTED UNDER REEXAMINATION SERVICE OF UNDERWRITERS' LABORATORIES INC. UL



Step out front in the Product Parade

You're off to a flying start—right from the drawing board—when design "specs" call for *pre-coated* Thomas Strip for metal parts.

This versatile, ready-to-use strip steel sparks many a design improvement and production short-cut. And, it extends the economy of steel to many parts once made with more costly metals—while maintaining all utility and appearance advantages. Uniform Thomas electrocoatings function either as the final finish, or as a ready base for further plating or painting.

Whatever your product, *pre-coated* Thomas Strip can inspire dozens of new ideas for improving quality and cutting costs. Available coatings and types are listed below.

THE THOMAS STEEL COMPANY • Warren, Ohio
Specialists in Cold Rolled Strip Steel

COLD ROLLED STRIP STEEL

Electrocoated with Zinc, Copper, Nickel and Brass • Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Spring Steel • Alloy Strip Steel, S.A.E. Grades • Produced to Your Specifications

Thomas Strip

FOR BETTER PRODUCTS . . .

FASTER . . . AT LOWER COST

New Methods for Making Light Aggregate Related

Washington

• • • **Development** of new and efficient methods for the production of lightweight concrete aggregate from clays, shales, slates, coal-mine wastes, and other mineral materials is described in a recent publication released by the Bureau of Mines after an intensive study conducted by the Bureau.

Use of lightweight aggregates in constructing large concrete and steel buildings means a saving of steel at times when steel is hard to obtain, according to the Bureau. The lighter weight of the concrete makes possible the use of less steel. Considered better suited to withstand the shock of earthquakes than standard concrete, lightweight concrete also can be used to build extra stories on buildings, which cannot support the additional weight of standard concrete and essential reinforcing steel.

Conducted by the Metallurgical Div. of the Bureau, tests were made in small, electrical and gas-fired furnaces and in gas and oil-fired rotary kilns. Aggregate samples also were tested by the Bureau of Standards for strength and other qualities.

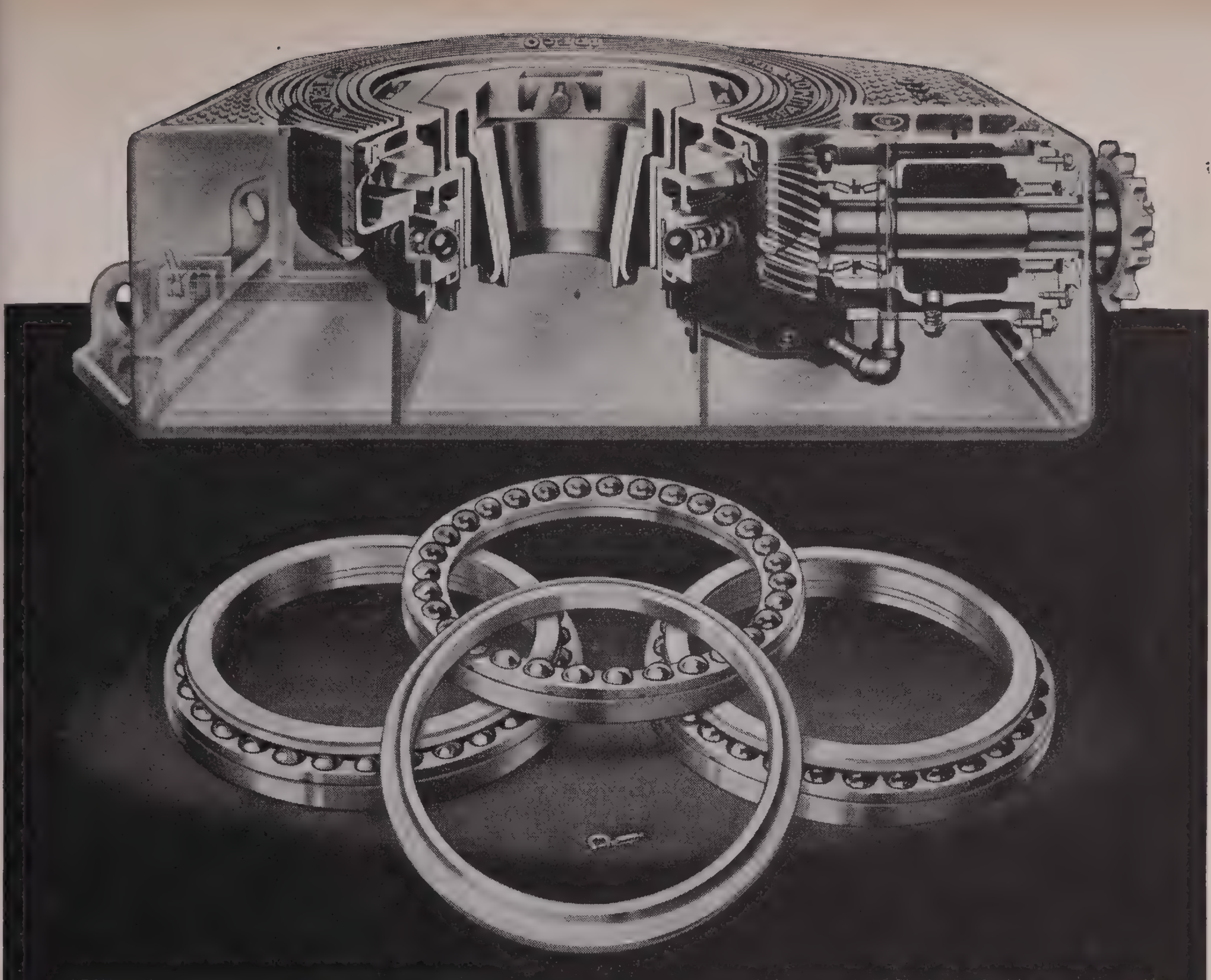
Studies Clay Deposits

Washington

• • • **A study** of clay deposits in north-central Kansas, undertaken by the Bureau of Mines in 1943 as part of the wartime mineral development program, is described in a publication recently released.

In 1943, the bureau investigated an area about 40 to 120 miles in extent and trending northeasterly from the vicinity of Ellsworth to the Nebraska state line, drilling 143 hand auger holes, excavating 26 trenches and 2 test pits. While individual clay beds in the Dakota formation have a reported alumina content ranging 37 pct to less than 20 pct, the analyses of the samples indicated *an average alumina content of 21 pct.*

A free copy of the Report of Investigations 4379, "Central Kansas Clay Deposits," may be obtained by writing to the Bureau of Mines, 4800 Forbes St., Pittsburgh 13.



KAYDON ANGULAR THRUST BEARINGS—USED ON ROTARY TABLES OF OIL DRILLING RIGS

CONTACTING KAYDON was the RIGHT IDEA for IDECO*

No manufacturer of heavy-duty machinery can afford to compromise on bearings, the very heart of efficient operation... particularly in powerful oil field rotary tables where the tremendous loads demand super-rugged, high precision bearings.

IDECO is one of many of America's outstanding machinery builders who find **KAYDON** Bearings are right! On the 14½" IDECO Rotary Table for Drilling Rigs 22.750" OD bearings are used . . . the 17¼" IDECO Streamlined Rotaries use bearings 29.250" OD . . . the 23", 36.000" OD bearings . . . the 27½", 39.625" OD bearings . . . big, rugged, but smooth and reliable in performance as a fine watch movement!

Other heavy machinery engineers also find it's the right idea to "Contact **KAYDON**" for bearings that more than meet the demands of steel mill and paper mill machinery, excavators, loaders, cranes, hoists, crushers, food processing and all types of heavy-duty equipment.

Counsel in confidence with **KAYDON**. Capacity now available for all sizes and types of **KAYDON** Bearings.

**International Derrick & Equipment Co. — One of the Dresser Industries*

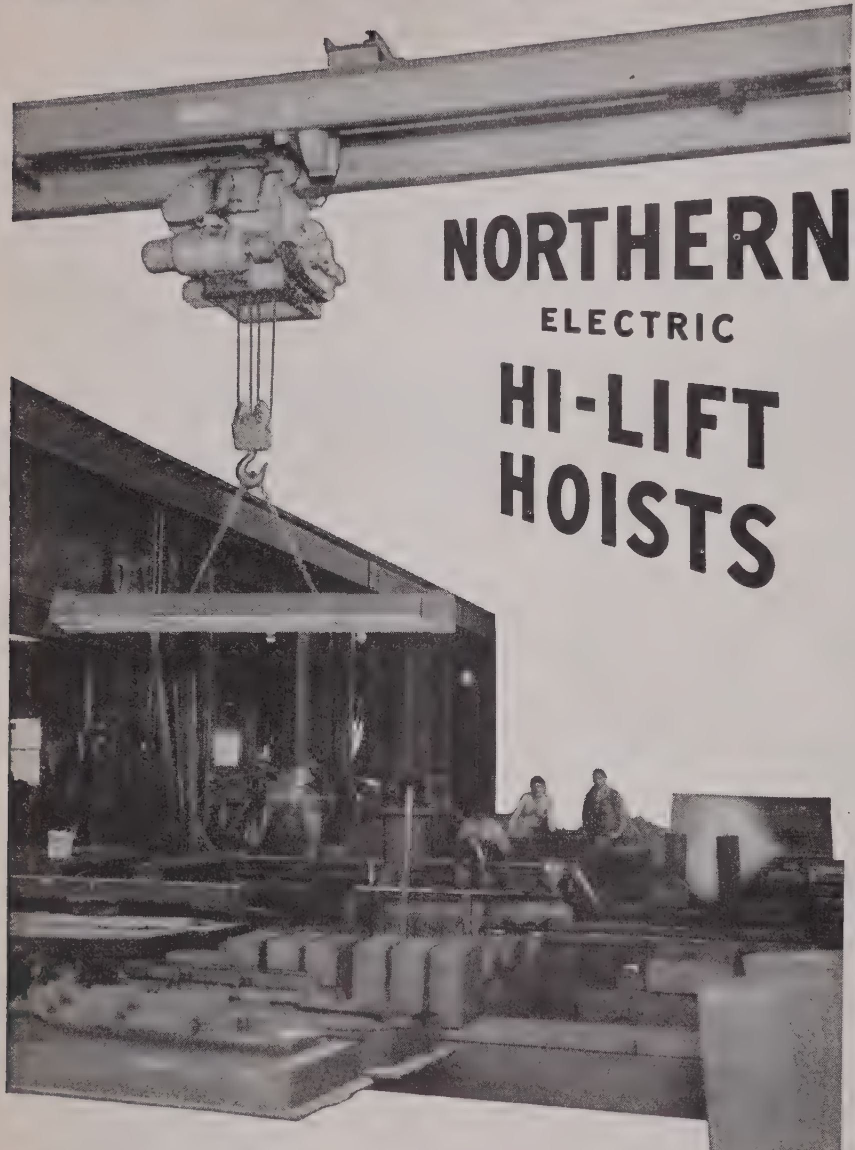
KAYDON *Types of Standard or Special Bearings:*

Spherical Roller
Taper Roller
Ball Radial
Ball Thrust
Roller Radial
Roller Thrust

THE KAYDON ENGINEERING CORP., MUSKEGON, MICH.

All types of Ball and Roller Bearings 4" bore to 120" outside diameter

labor SERVING hoists



MEAN BETTER HOUSEKEEPING

Neat stacking of work, free straight aisles, cleaner floors, orderly arrangement of work for better visibility and supervision, means better foundry or shop efficiency. MECHANIZE with LABOR SERVING NORTHERN ELECTRIC HI-LIFT HOISTS to make good housekeeping easier.

★ Let us send Bulletin No. 135-H ★

OVERHEAD ★
ELECTRIC CRANES ★
AND HOISTS ★

NORTHERN
ENGINEERING WORKS
2615 Atwater St., Detroit 7, Mich.

Use Electrostatic Field In New Painting Process

Indianapolis

• • • Now you can paint automatically without even aiming your paint gun directly at the area to be covered.

In addition to substantial labor savings, engineers for the Ransburg Electric Coating Corp. of Indianapolis who have developed the new process claim savings up to 50 pct in the amount of paint required and better deposition of the paint.

Ransburg Electro-Spray creates an electrostatic field in the spray booth by means of fine wire electrodes. As the finely atomized paint is introduced into the coating zone, the paint particles are charged negatively. Thus charged, they are attracted to the positively charged articles on the conveyer.

The process can also be used to remove excess paint at drain-off points.

Ransburg engineers contend that "overspray" is minimized since the paint particles that miss the part will actually turn back 180 degrees and be effectively deposited.

According to Harold Ransburg, inventor of the process, Electro-Spray is highly effective in painting shielded areas. Included in a growing list of installations are Norge and Servel, Inc., and the Studebaker plant at South Bend which has a pilot line for spraying large metal parts.

Engineers Find Rust Has Possibility as Insulator

Pittsburgh

• • • **Because rust** is a good electrical insulator, Westinghouse Electric Corp. engineers about 3 years ago began to investigate uses to which it could be put to use.

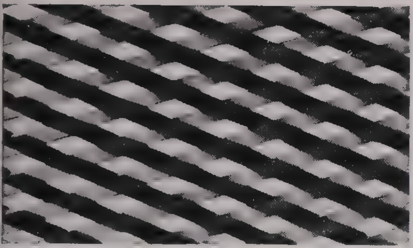
One possibility was as an insulator between the iron laminations of motors and generators. It was satisfactory, but considerable difficulty was encountered in obtaining uniform results.

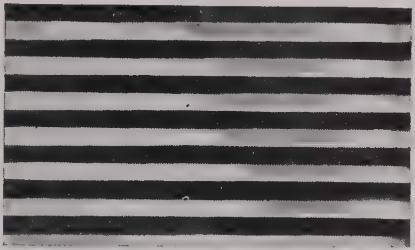
Recently materials engineers discovered the reason—the coatings were not of the same iron composition even though no difference was apparent to the naked eye. Being of different composition, the oxide coatings naturally had different resistances. The reason for the nonuniformity was

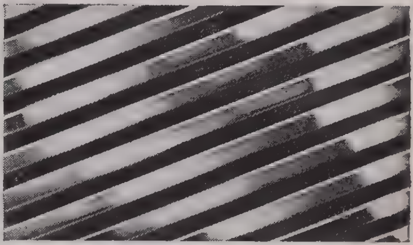
Paradise *for* Designers

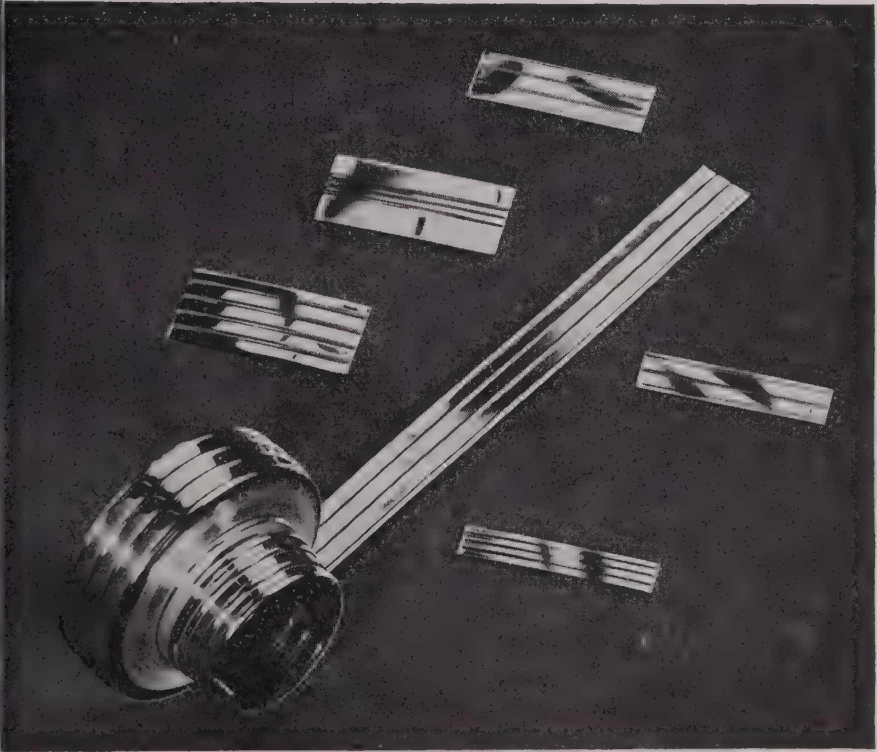
☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

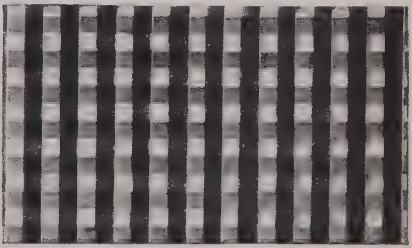
NICKELOID PRE-PLATED METALS SHOWN IN GREAT ARRAY OF PATTERNS, FINISHES


Nickeloid Metals Diamond Crimp


Nickeloid Metals Horizontal Crimp


Nickeloid Metals Diagonal Crimp


The new embossed design shown here in several interesting variations. Design can be embossed (raised) or intaglio (depressed).


Nickeloid Metals Square Crimp

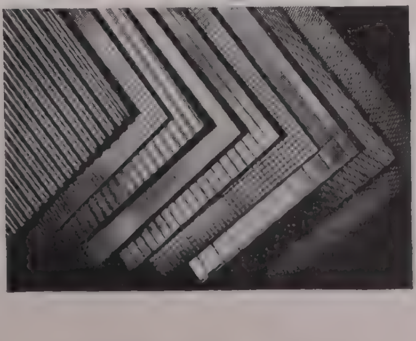
Send for our New

Sampler

Containing actual metal samples of many of the finishes and patterns which are available.

**AMERICAN
NICKELOID
COMPANY**
PERU 2, ILLINOIS

A few of the gleaming, interesting patterns in Nickeloid Metals which the product designer can adapt to his needs.



Product designers need not be limited to the use of unrelieved bright surfaces of plated metals in adapting Nickeloid Metals to trim or functional use in their new designs. These metals are offered in various interesting stripes, crimps, and embossed designs.

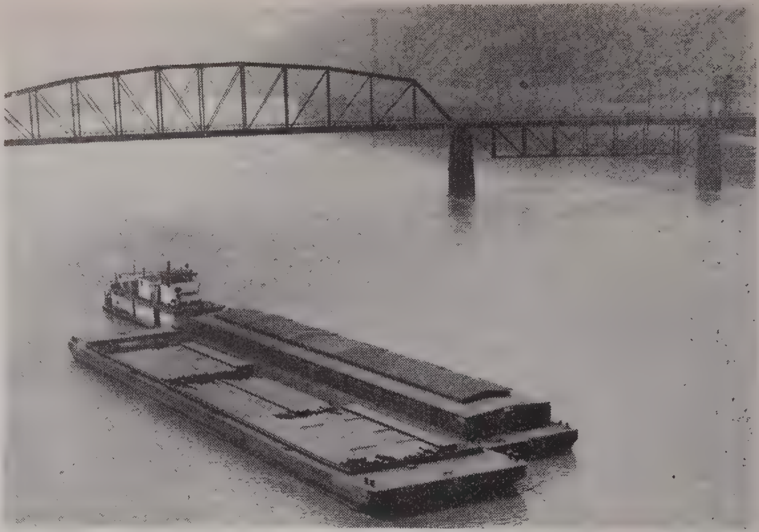
Thus, if the product surface to be trimmed is already large and unrelieved, it may be that a beaded trim will brighten the product and relieve the monotony of large, unbroken surfaces. Moreover, patterns many times have a functional use: such as the use of diamond crimp or square crimp to improve diffusion of light (light reflectors) or of heat (room heaters).

Nickeloid Metals are furnished in durable pre-plated finishes of Chromium, Nickel, Brass or Copper in sheets and coils — base metals of steel, zinc, brass, copper, or aluminum. The base metal can be chosen from the standpoint of one or more of the following factors: cost, resistance to heat, rust-resistance, availability, workability.

due to the temperature at which the oxide was formed. Oxides formed above 570°C have low resistance, since FeO is formed at this temperature and subsequently decomposes into free iron and Fe_3O_4.

The lack of uniformity was overcome by a new process of steam oxidation, one in which the annealing and oxidation procedures were combined. The electrical sheet steel was placed in a heat-treating furnace, annealed in the proper atmosphere, then brought down below 570°C for the steam oxidation. Bringing the temperature down below this level assures a more uniform oxide film, and thus renders the sheet steel more suitable for electrical insulation.

The coating thus formed is moisture-proof and burnout-proof, as well as providing a good base for finishing operations. Steel thus coated is suitable for installation in a wide variety of machines and devices from small contactors to traction motors and other large rotating machines.



Freight Traffic Moved On Inland Waterways Set Record in 1948

Pittsburgh

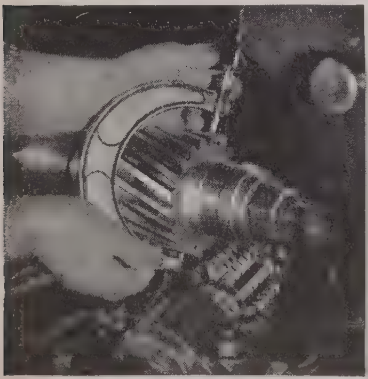
• • • **Last year** is believed to have seen a new record of half a billion tons of freight hauled on the nation's inland waterways. This is the estimate of the American Waterways Operators, national association of private water carriers. Official figures haven't yet been released. The association predicts a 10 to 15 pct gain for 1949.

Some idea of the growing importance of inland waterways transportation can be had from extension on Jan. 11 of the 25,000-ton monthly steel allocation for barge construction and repair. Continuation of this program through August is now assured.

Official approval of this allocation adds weight to the prediction (THE IRON AGE, Aug. 12, 1948, p. 119) that barge shipments of steel out of the Pittsburgh district may double by 1950. This assumes that steel demand remains near present levels.

Dravo Corp., with shipyards at Pittsburgh and Wilmington, Del., is one of the country's big barge builders. At the beginning of this year it had orders for 110 hulls, more than it launched in any prewar year. Since the end of World War II Dravo has constructed and launched 444 hulls, 47 more than it built during the war.

Among new developments in barge design are the integrated types: The first and last units have raked ends while the inner barges have square ends. This reduces turbulence, steps up efficiency. An increasing tendency to design barges for the specific product they'll carry is also reported by Dravo. Wider use of radar to permit towboats to run in fogs is also boosting traffic efficiency on the Ohio and Mississippi Rivers.



MAKE YOUR BLUEPRINTS COME TRUE

. . . with Amgears co-ordinated engineering and manufacturing know-how

We have the designing engineers viewpoint on the importance of strict adherence to blueprints and specifications. The same personal care is given to the production of gears and gear assemblies in our plant that the designer gives to the engineering of the job.

Specifications are studied by our engineers to determine the most efficient economical manufacturing procedure. Sometimes modifications are suggested to achieve greater production economy, but when a contract is accepted the specifications are strictly followed in production.

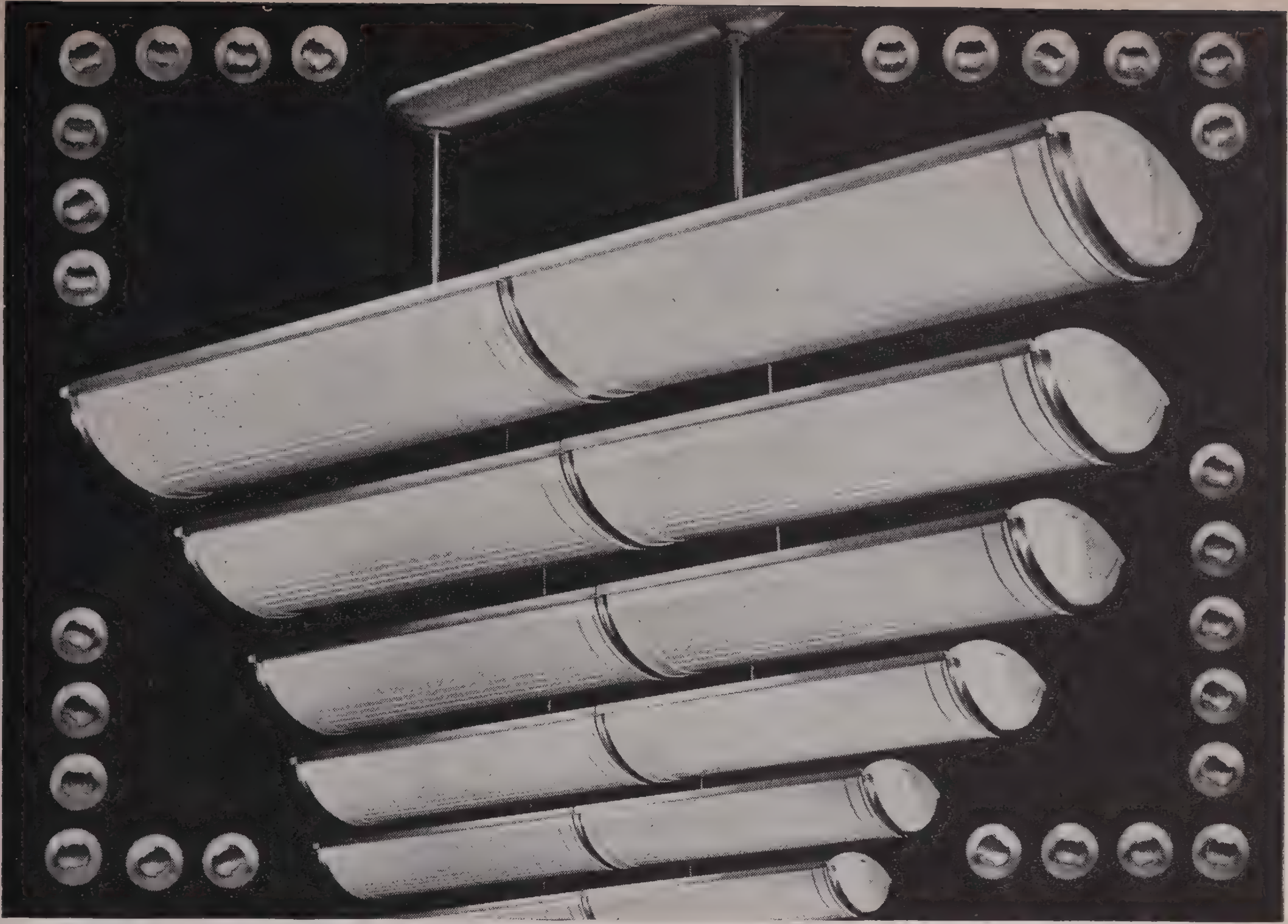
★ *A qualified sales engineer representing Amgears, Inc., is located near you for personal service* ★ *We invite correspondence on your particular gear problems.*

★ ***We specialize*** . . . in all types of gears and gear assemblies for original equipment.

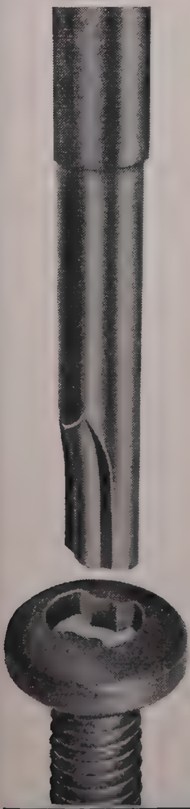
- Gears for construction equipment.
- Automotive and tractor gears.
- Fine pitch instrument gears.
- Gears for farm implements.
- Special gears for high speed operation, with shaved or ground teeth.
- Miter and bevel gears for mining machinery.
- Helical shaved or ground tooth pump gears.
- Aircraft engine and airframe gears.

AMGEARS, INC. 6633 WEST 65TH STREET,
CHICAGO 38, ILLINOIS PHONE — PORTSMOUTH 7-2100

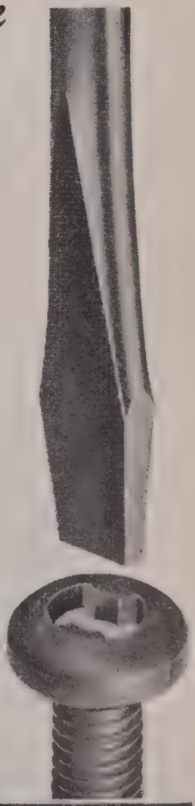
AMGEARS, INC.
CHICAGO
A SUBSIDIARY OF HUPP CORPORATION
CONTRACT MANUFACTURERS
Detroit • Cleveland • Chicago



TYPE "A" ASSEMBLY BIT



COMMON SCREWDRIVER



Only CLUTCH HEAD *Could Qualify Here*

At Vermillon, Ohio, where they produce commercial lighting fixtures that compete with daylight, they had their production problems.

The F. W. Wakefield Brass Co. state frankly that they solved these problems by designing three fluorescent models . . . Beacon, Diplomat, and Star . . . for standardization on CLUTCH HEAD Screws. Following experiment and experience with slotted and other types of recessed head screws, the Wakefield people say:—

"We believe our assembly job would have proved impracticable without CLUTCH HEAD's improved type of screw."

"Use of CLUTCH HEAD immediately saved us 35% in assembly time."

"Previously, damage from driver skidding was *VERY* serious . . . Now we have none."

"The absence of 'ride-out' with CLUTCH HEAD's non-tapered drive means safer as well as easier driving for higher production."

"Today we use only one Type 'A' Bit per week as against 16 previously used with other type screws."

"The Lock-On feature has 2-way importance for us. It simplifies both assembly and field-servicing of our units."

Regardless of the nature of your product, you will find in America's Most Modern Screw advantages covering every phase of assembly production . . . for increased output at lower cost through safer, faster and smoother operation. Make your own appraisal of these advantages. Send for package assortment of Sheet Metal, Thread-forming and Machine screws, sample Type "A" Bit, and illustrated Brochure.

CLUTCH HEAD - SCREWS -

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

NOTICE OF SALE
BY
THE ATTORNEY GENERAL
OF
THE UNITED STATES OF AMERICA
OF CERTAIN
STEEL MILL EQUIPMENT

FINAL NOTICE

Final Notice inviting offers to purchase from the Attorney General all of his right, title and interest in and to certain unfinished rolling mill machinery and other unfinished steel products located on the premises of the Mesta Machine Company, Pittsburgh (West Homestead), Pennsylvania, as follows:

Lot 1. **One (1) Motor Driven Billet Shear with Gauge and Back Shear Table. Weight approximately 377,000 lbs., Capacity approximately 475 tons. Estimated to be 97½% complete.**

Minimum price $ 5,739

Lot 2. **One (1) 6-Stand 24.8" Two-high Continuous Billet Mill. Weight approximately 2,223,000 lbs., Capacity approximately 700,000 net tons per year. Estimated to be 97½% complete.**

Minimum price $33,840

Lot 3. **Table Between Finishing Stand, Flying Billet Shear with Pinch Rolls. Weight approximately 315,700 lbs. Estimated to be 90% complete.**

Minimum price $ 4,806

Lot 4. **Four (4) Steel, pressure vessel forgings. Weight approximately 572,000 lbs.**

Minimum price $ 8,708

Lot 5. **One (1) Blooming Mill Roll. One (1) Blooming Mill Pinion. Not completed. Rough forged only. Weight approximately 117,600 lbs.**

Minimum price $ 1,790

Total Weight Lots 1 through 5 approximately 3,605,300 pounds.

Total Minimum price for Lots 1 through 5, as an entirety $54,883

which property was acquired by the Attorney General by virtue of Vesting Order No. 133 dated August 28, 1942 (7 F.R. 7063, September 5, 1942).

Sealed bids addressed to the Office of Alien Property, Department of Justice, Room 264, 101 Indiana Avenue, N. W., Washington, D. C. will be received until 11:00 A.M., Tuesday, February 15, 1949 at which time and place said bids will be publicly opened and declared. **Each bid must be in duplicate and on a Bid Form, together with accompanying affidavit, which will be furnished upon request.** The form provides, among other things, that the offer included in the bid shall be irrevocable until 3:30 P.M., on February 23, 1949.

Bids may be submitted for all of the lots, as an entirety, or for any of the individual lots. No bid for any individual lot will be considered unless it exceeds the minimum price shown above for such lot, and no bid for the five lots, as an entirety, will be considered unless it exceeds $54,883.

The Attorney General reserves the right to reject any or all bids or, at his election, to waive any or all defects in any bid. Bids will be considered only from citizens of the United States or business organizations controlled by American citizens and organized under the laws of the United States or a State or Territory thereof.

A certified, cashier's or banker's check payable to the "Attorney General of the United States" in an amount equal to 10% of the bid price must accompany the bid. The Attorney General's right, title and interest in the property will be conveyed to the successful bidder or bidders by Bill of Sale without any representation, warranty or guaranty, express or implied. Further particulars with respect to the said property and forms for submitting bids may be obtained at the Office of Alien Property at either 120 Broadway, New York, New York or 101 Indiana Avenue, N. W., Washington, D. C.

Dated at Washington, D. C., this tenth day of January, 1949.

TOM C. CLARK, *Attorney General*

Metal Industry Furnishes Numerous NAM Officials

New York

• • • **Seventeen executives** prominent in the foundry, metals and mining industries have begun their service as 1949 officers and members of the board of directors of the National Assn. of Manufacturers, following their election at the 53rd annual Congress of American Industry, held in New York City, and sponsored by NAM.

William P. Witherow, president, Blaw-Knox Co., Pittsburgh, was elected an honorary vice-president for life. Elected national vice-presidents were Clarence B. Randall, assistant to the president, Inland Steel Co., Chicago, and Thomas J. Bannan, president, Western Gear Works, Seattle, Wash.

Newly-elected members to the NAM board of directors include C. E. Erickson, president, C. E. Erickson Co., Inc., Des Moines, Iowa; H. P. Bigler, executive vice-president, Connors Steel Co., Birminham, Ala.; Henry B. Neef, president, Gate City Iron Works, Omaha, Neb., and G. F. Coope, president, Potash Co. of America, Carlsbad, New Mexico.

Re-elected to serve as NAM state directors were W. M. Neal, vice - president and secretary, Sloss-Sheffield Steel and Iron Co., for Alabama; John H. Chaplin, president, Veeder-Root, Inc., and Roger E. Gay, president, Bristol Brass Corp., for Connecticut; J. Pat Beaird, president, J. B. Beaird Co., Inc., for Louisiana; N. R. Patterson, president, Patterson Steel Co., for Oklahoma; James D. Francis, president, Island Creek Coal Co., for West Virginia; John T. Whiting, president, Alan Wood Steel Co., and M. M. Anderson, vice-president, Aluminum Co. of America, both for Pennsylvania.

In addition to the directors just elected, Robert M. Gaylord, president, Ingersoll Milling Machine Co., Rockford, Ill., and Charles R. Hook, chairman of the board, Armco Steel Corp., Middletown, Ohio, will continue to be members of the 1949 board.

These executives will serve through the coming year as national, regional and state representatives of NAM.

Five 24 Million V Betatrons Shipped For Research Work

Milwaukee

• • • **During** 1948 Allis-Chalmers Mfg. Co. conducted very extensive research and engineering development work in the electrical and industrial equipment field. Increasingly intensive shop and field testing and many pioneering investigations were made.

Possibly one of the largest single programs was the five 24 million V Allis-Chalmers betatrons which were shipped partly completed or complete for nuclear and medical research work. These five machines went to the University of Saskatchewan, University of Illinois, Rockefeller Foundation, with the instrument consigned to Brazil, University of Pennsylvania and the U. S. Navy.

Last year the company started development work on a new betatron design specifically adapted for medical use. In addition, synchrotron welded core structures for the University of Michigan and Purdue University were shipped last year, and core assembly components for the University of Illinois 80 million V flux-biased betatron were fabricated. This instrument is designed to permit the raising of the voltage energy level by superimposing a direct current field on the betatron pole face.

Research in control equipment, at A-C, resulted in an entirely new arc chute design through which the arcing time is reduced by one-half of the former time available with the best of equipment. As a result of some of this study, vents are now being added in the mounting base of enclosed contacts to eliminate the possibility of corrosion from the products of the arc.

Special equipment designed for naval and aircraft research projects included a 1750 hp variable pitch pump drive to maintain constant motor speed independent of pump loading. The turbine blades of these pumps are welded instead of cast so that it is possible to vary the pitch of the blade to meet the different requirements of different applications. Another interesting development has been the floating dynamometer. Torque

HALLDEN
Automatic Shears

CUSTOM BUILT SHEARS FOR ANY APPLICATION

Hallden Automatic Flattening and Cutting Off Machines can be built into lines requiring special shearing applications.

Hallden Automatic Shears are designed to permit continuous feed of metal through the machine by synchronizing the flattener with the flying shear. Cutting accuracy can be held to plus or minus 1/64".

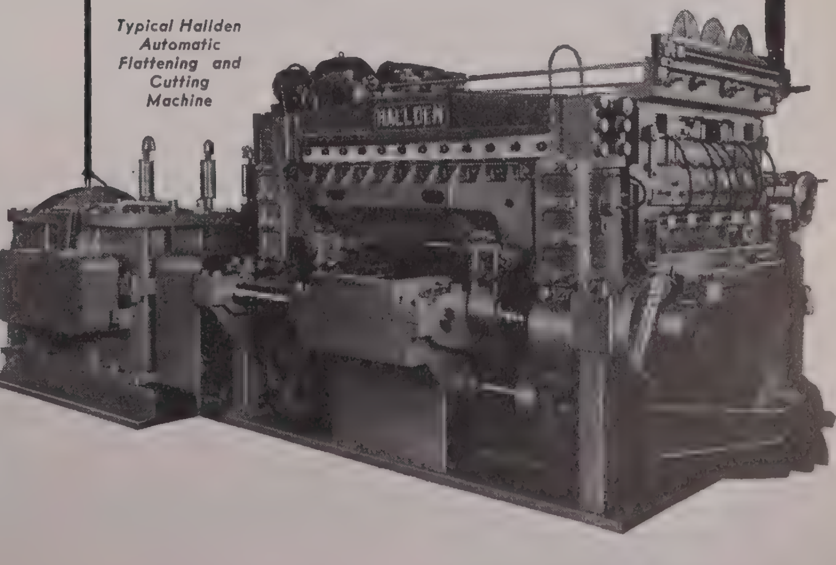
Hallden Shears are self-contained units which, under normal operation, require little maintenance other than lubrication.

Hallden's flexible design allows quick changing of shear knives and easy removal of flattening rolls for grinding. The shear knives always move in a mutual plane.

If you have a shearing problem, consult Hallden, *the shearing specialists.*

THE HALLDEN MACHINE COMPANY
THOMASTON, CONNECTICUT

Sales Representatives
The Wean Engineering Co., Inc., Warren, O.
W. H. A. Robertson & Co., Ltd., Bedford, England



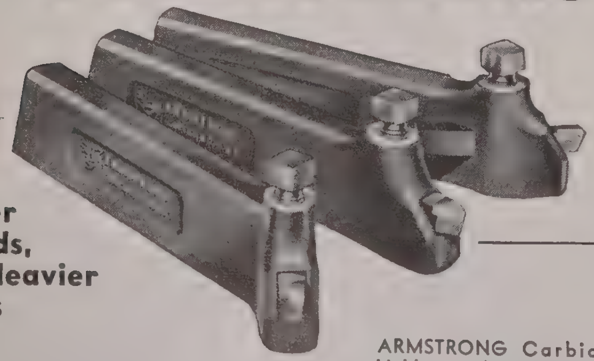
Typical Hallden Automatic Flattening and Cutting Machine

measurement in very large dynamometers is now being handled by mounting the instrument on an oil film, allowing rotation through a small arc with almost negligible friction. This greatly simplifies the amount of electrical control or instruments needed.

Also in the electrical line, the company has developed a new electronic device to isolate and amplify dc voltages. Alternating current voltages have been very easy to isolate, but until this development dc isolation was most difficult. Now, several different voltages, none with a common reference point, can be amplified and fed into any number of instruments all with a common terminal. Thus, voltages in steel mill motors can be measured in any one of the many different single circuits.

In the railway field an experimental single stage blower driven by a direct connected gas turbine which will utilize the hot exhaust gases, at 700°F, of the engine for its power, has been developed by Allis - Chalmers engineers for supercharging diesel locomotives. This blower is rated at 9130 cfm of inlet air with a pressure ratio of 1.41. Both the rotor disc and the blade are fabricated from high temperature metal S590.

Far removed from the electrical experiments is the project being conducted in conjunction with Marquette University. Some time ago it was discovered that coal miners do not get silicoses but no one was sure why they didn't contract this disease. Allis-Chalmers and Marquette University experiments indicate that only electrically active crystal forms of minerals are responsible for producing silicosis. Thus, the danger of any given dust can now be predicted and possibly steps can be taken to convert dangerous dusts into harmless ones. The actual mechanism of an effect which causes an accelerated development of silicosis, when animals carrying electrically active crystals in their lungs are exposed to radiofrequency waves is also being studied.



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Military Establishment Seen Biggest Business

New York

• • • **The importance of** thorough preparation for industrial mobilization is accentuated by the magnitude of the national security program, which constitutes the biggest business in the world todday, according to first report of Secretary of Defense James Forrestal on the National Military Establishment.

"The portion of the program which is being carried out by the National Military Establishment represents a current annual expenditure of almost $12 billion. There are few billion-dollar private enterprises. The business of the Army, Navy, or Air Force is each larger than that of any private industry.

"Despite the expansion which took place during the war years, the nation's industry—particularly that part which manufactures military materiel—today is running close to peak of its present productive capacity. We have started to rebuild our defenses without the slack in our economy which existed in 1940, when there were 8 million unemployed and many plants were still idle.

"**Our mills** and factories today are trying to catch up with the backlog of civilian demands for products which were unavailable during the war, and there is virtually full employment. There are shortages of basic raw materials which might lead to rationing.

"It is obvious, therefore, that if our free economy is to continue, our military and civilian requirements must be kept in proper relation, although it may be necessary to accept some denials in our accustomed standards if we are to achieve a state of readiness which to me seems indicated by the uncertain state of the world."

$63 Million for Airports

Washington

• • • **Outstanding** grant offers of federal funds for construction or improvement of airports amounted to more than $63 million as of Jan. 1. Actual working funds involve more than $125 million, since the sponsor of the projects must match the federal contribution.

Declares Decision in Cement Case Follows A Narrow Definition

Cleveland

• • • **The Federal Trade** Commission's and the Supreme Court's finding of monopoly in the cement case is the result of an unduly narrow definition of competition, Alfred Nichols, University of California, told the annual meeting of the American Economic Assn., here recently.

Competition in the sense of "individualistic action" which ignored mutual dependence is rarely found, he declared. "It follows as a consequence that most markets are monopolistic, and such a result is due to our definition and not to any 'concerted action' by producers."

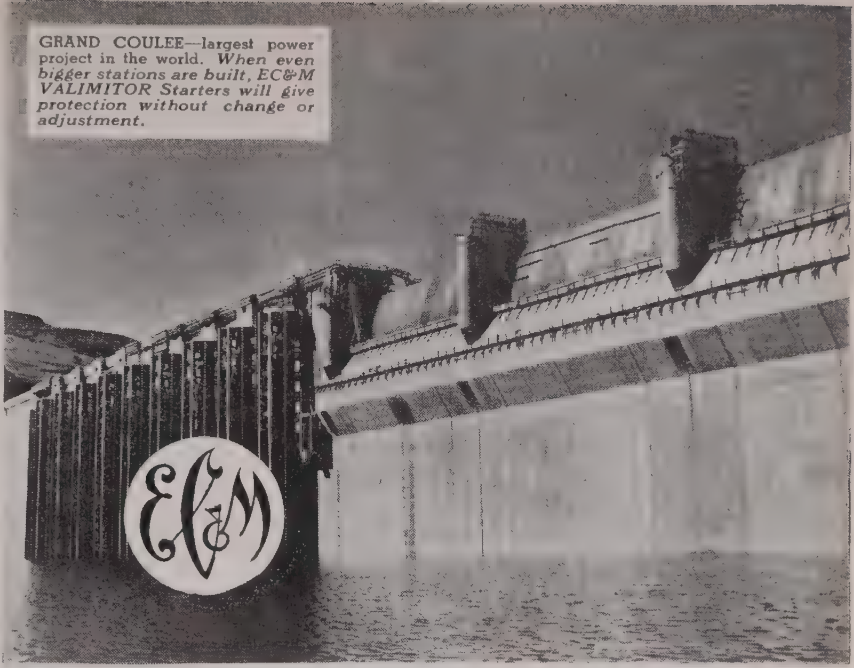
Mr. Nichols pointed out that it is equally easy to define monopoly narrowly and show first, that the cement industry does not meet its conditions, and second, the existing practices of the industry are not compatible with monopoly.

Mr. Nichols charged, "economic progress has largely consisted in the expansion of the market, or the reduction of the importance of particular locations or distance. The enlargement of the market for any particular firm has not only permitted the achievement of lower unit costs but has reduced risks by reducing dependence upon particular markets or buyers. Distant buyers have similarly benefited through the increase in the number of alternative sources of supply."

These buyers, he said, have as much right to take advantage of the large fixed investments in plant of their supplying firms as do their competitors of their more favorable location.

"The Commission and Court is strangely prejudiced in favor of but one type of economic advantage, location. Blind attachment to the principle of uniform pricing would have made the development of most of our heavy industry with its necessary transportation of the products of mines and farms virtually impossible."

In Mr. Nichols' opinion, prohibition of freight absorption makes possible what the basing point system prevented, monopoly. Buyers no longer having alternative



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sources of supply will be completely at the mercy of the seller or the few sellers in their local market.

Prices will consequently be higher both because of the prevention of what is the only type of competition possible where the freight cost-total cost ratio is large; and by the restriction of local capacity to local demand.

In conclusion he said the primary effect of the decision is that the local seller is insulated from competition.

"Since, in practice most forms of competition consist principally in an increase in the number of sources of supply through the receipt of variable mill nets, I have no doubt that business will find some ways to avoid what it now considers is a disastrous decision. Why the uniform f.o.b. system should be considered less 'artificial' than the basing point system is a problem in semantics not economics."

Gets More Plane Orders

Seattle

• • • **Receipt of** an additional order for 23 C-97-A Stratofreighters brings the total number of these military transports on order with the Boeing Airplane Co. to 50. Thirteen of these double-deck transports have been delivered already. The new Stratofreighters on order will be powered with 3500 hp Pratt and Whitney Wasp Major engines, and contain the same additional advancements in design as have been made in the Boeing B-50 Superfortress bombers over the original Boeing B-29.

When these new Stratofreighters get into operation they will carry approximately three and one-half times as many ton miles on the Berlin air lift per day as the present standard type four engine machines now operating over that route. The 60 Stratofreighters now being built or on order, if assigned to the air lift, would be the equivalent in capacity of 210 C-54s.

Boeing officials had stated that the C-97s would be assembled at the Renton, Wash., factory, which has been practically inactive since the end of the war. However, since the plant has been put up for sale by the WAA a change in schedules may be in order although it is anticipated that Boeing will be bidding on the unit.

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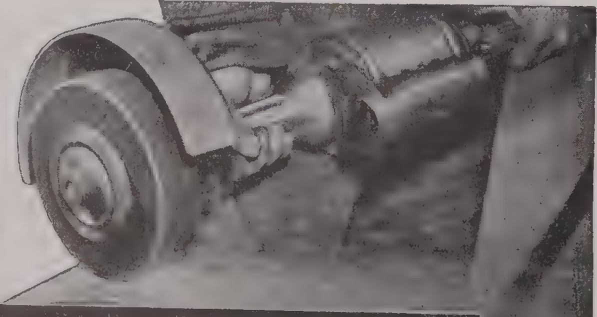

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Urges Businessmen Help In Government Affairs

Cleveland

• • • **T. M. Girdler,** chairman of the board, Republic Steel Corp., urged greater participation by top business management in governmental affairs, in an address recently before the Academy of Management at Cast Institute of Technology.

"We have been sitting on the sidelines too long and complaining about government without doing very much to remedy our complaints," said Mr. Girdler. "More business men in government would mean a more businesslike government.

"Today we are faced with an almost world-wide desertion of the philosophy of democratic government," he said. "No one knows better than business men the dangers of state control to the individual. Business men and women, both big and small, must be unafraid to express themselves on this vital subject. They must point out clearly and unmistakably the advantages which a democracy has, not for the employer, but for the employee."

Enumerating problems confronting business management today, Mr. Girdler said the chief concern is determining how profits earned by a company should be used.

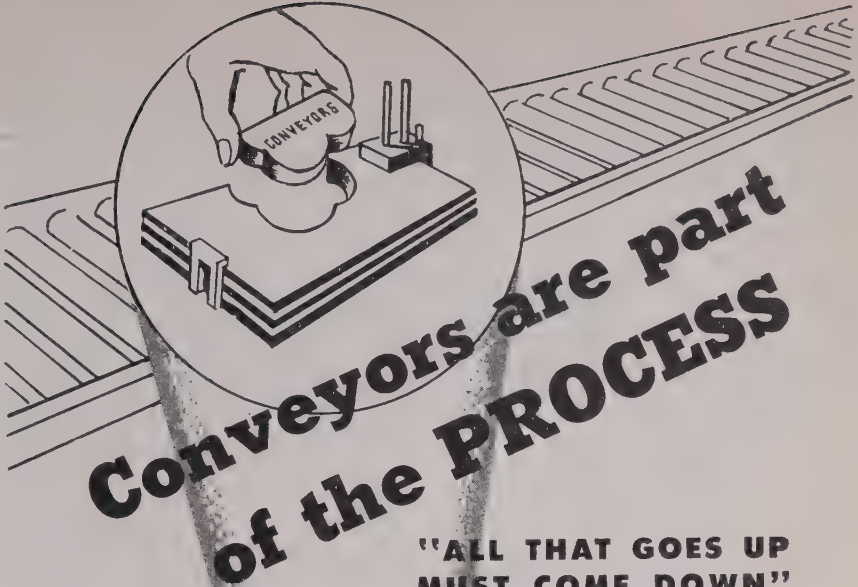
"The wise, courageous manager, looking to the long-time interests of both his stockholders and employees, will resist pressure from both groups and plow a substantial part of the profits back into the business," he declared. "In the face of the tremendous increase in replacement costs, only by this means can equities of the 15 million Americans who own stock in American business be protected without debt financing by bond issues or bank loans."

A wider knowledge of employee and public relations is essential in today's manager, Mr. Girdler said.

"The day is long past when business can operate behind a closed door. Everything a company or its management does must be examined from many directions and full account given to public interest."

Mr. Girdler urged that business men contribute not only financially to civic welfare activities but should devote personal interest and participation as well.

"We must demonstrate through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applies to any process of manufacture . . . and "ups-and-downs" cost money.

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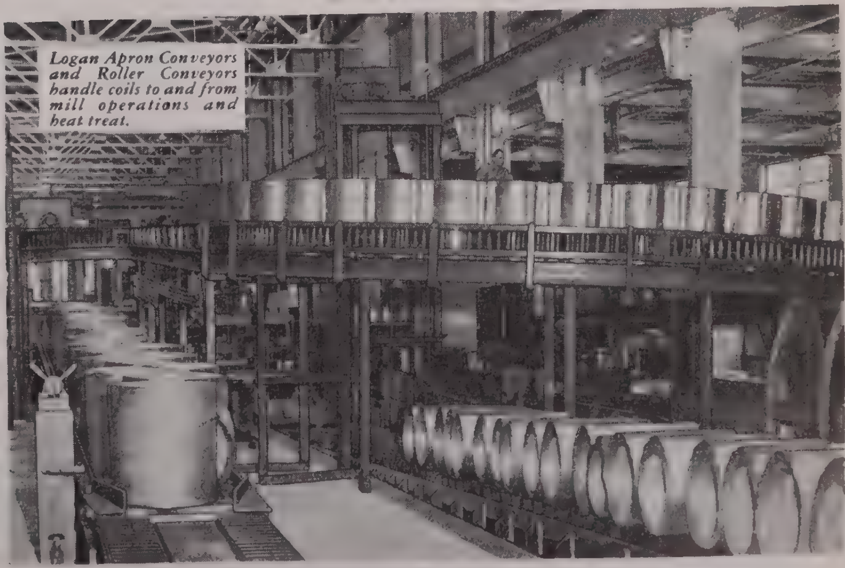

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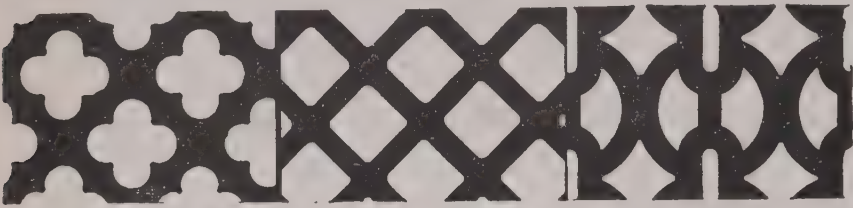

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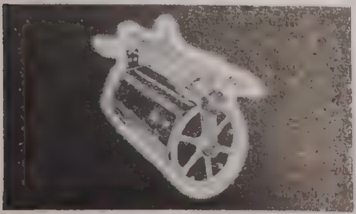

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our interest and service that business is a good citizen," he said. "If the top man of a company cannot undertake such responsibilities, then others within the organization should assume them for him."

In closing, he urged that business management recognize its leadership responsibilities in the defense of free and democratic government and that the leaders of education, religion, the professions and labor recognize their responsibilities as well.

Steam Turbine Electric Locomotives Doing Well

Pittsburgh

• • • **Steam turbine electric** locomotives are appearing on the scene of railroading and living up to the performance expected of them, according to Westinghouse Electric Corp. engineers. During the past year, the Chesapeake & Ohio R. R. has placed 3 locomotives of this type in service.

The next step in the evolution of these engines is to improve the boiler. A cooperative development by Babcock and Wilcox, Baldwin, and Westinghouse is to result in a 4500-hp locomotive with the boiler supplying steam at 600 lb, 900 degrees instead of the 300 lb, 750 degrees essentially standard now.

Use of higher steam conditions and lower turbine back pressure, made possible by using forced draft, will result in considerably improved fuel economy and a much smaller boiler. Forced draft is expected to increase combustion efficiency materially.

The gas-turbine locomotive is expected to become a reality late this year or early next year. Now under construction are its two 2000-hp gas-turbine power plants. These will follow closely the general arrangement and construction of the 2000-hp unit, which has been plant-tested for two years with very successful results.

The locomotive will have a total turbine rating of 4000 hp, will be only 78 feet long, and will have power applied to 8 axles. For comparison, present diesel-electric locomotives of this power for passenger service employ two units of about 150 feet total length and have power applied to 8 axles.

Will Make Compressors For Biggest Pipe Line

Mt. Vernon, Ohio

• • • **Cooper-Bessemer Corp.** has been awarded a contract for the construction of 21 new-type "Turboflow" gas engine driven compressors, the largest of their type in the world, for the Transcontinental Pipe Line Corp.'s proposed 30-in. pipe line, which is to be built by Fish Constructors, Inc., Houston, Texas, according to Gordon Lefebvre, president and general manager of Cooper-Bessemer.

The contract, thought to be the largest of its kind, represents authorization to build 70 pct of the gas engine driven equipment required for their 1949 construction program.

The 10-cylinder GMW gas engines scheduled for this project are rated at 2400 brake hp each. As a result of the "Turboflow," a Cooper-Bessemer development, these engines will draw 15 pct less fuel from the line than formerly needed to operate conventional gas engines of equal horsepower.

"It is conservatively estimated that well over 5 million cu ft of natural gas will be saved each day through the higher operating efficiencies of the new-type 'Turboflow' engines," Mr. Lefebvre's announcement stated. "The daily saving of 5 million cu ft of natural gas will mean that much more available fuel to boost deliveries to industrial and domestic consumers in the East."

The Transcontinental Pipe Line is to be the largest and longest of its kind in the world. The 30-in. line will deliver 500 million cu ft of natural gas each day from reserve fields in the Gulf-Texas sectors over a distance of 1840 miles to the terminus on the east bank of the Hudson River in New York. Gas deliveries will be made primarily to distributors presently engaged in the production and distribution of manufactured gas. Transcontinental believes that its natural gas will be used also by east coast producers as a substitute for oil.

Distributors to be supplied by the Transcontinental Pipe Line now furnish manufactured gas to a population of over 9,250,000 in New York City, 3,786,000 in New

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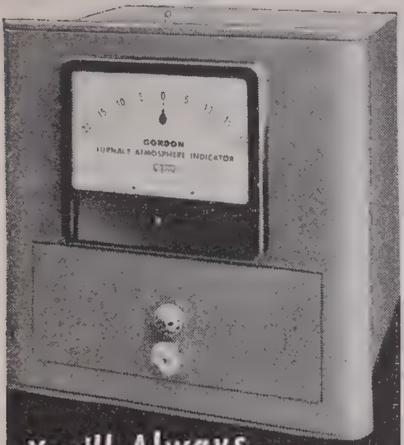

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While the total output of the Transcontinental Pipe Line will be 500 million cu ft of gas daily, experts in the Gulf-Texas fields report sufficient reserves in that sector to supply Transcontinental with all the natural gas it needs for the next 30 years. This estimate is with the assumption of a yearly withdrawal rate of 1.3 trillion cu ft to start, increasing to 2 trillion cu ft in the next several years.

470,000 tons of steel will be required for the construction of the pipe line alone. Based on present deliveries of pipe, Transcontinental believes its line will be completed by the early part of 1951.

ASM Adds New Members To National Committees

Cleveland

• • • **New members of** national committees, American Society for Metals, were announced recently by W. H. Eisenman, ASM national secretary.

Additions to the Advisory Committee on Metallurgical Education are: A. R. Troiano, Professor of Metallurgy, Notre Dame; John Chipman, Professor of Metallurgy, M.I.T.; Harry P. Croft, vice-president in charge of research, Wheeling Bronze Casting Co.; M. A. Grossmann, director of research, Carnegie-Illinois Steel Corp.; Dr. Alfred Bornemann, Stevens Institute of Technology; Robert F. Mehl, director Metals Research Laboratory, Carnegie Institute of Technology; John W. W. Sullivan, American Iron & Steel Institute; Nicholas J. Grant, Massachusetts Institute of Technology; M. A. Hunter, Dean of Faculty, Rensselaer Polytechnic Institute; L. M. Pidgeon, Professor Metallurgical Engineering, University of Toronto.

Three names have been added to the Constitution and By-Laws Committee. They are: F. A. Forward, Head, Dept. of Mining and Metallurgy, University of British Columbia; W. J. de Mauriac, Philadelphia Electric Co. and Fred J. Robbins, Sierra Drawn Steel Corp.

The Educational Committee advances member H. B. Knowlton, International Harvester Co. to the

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to see
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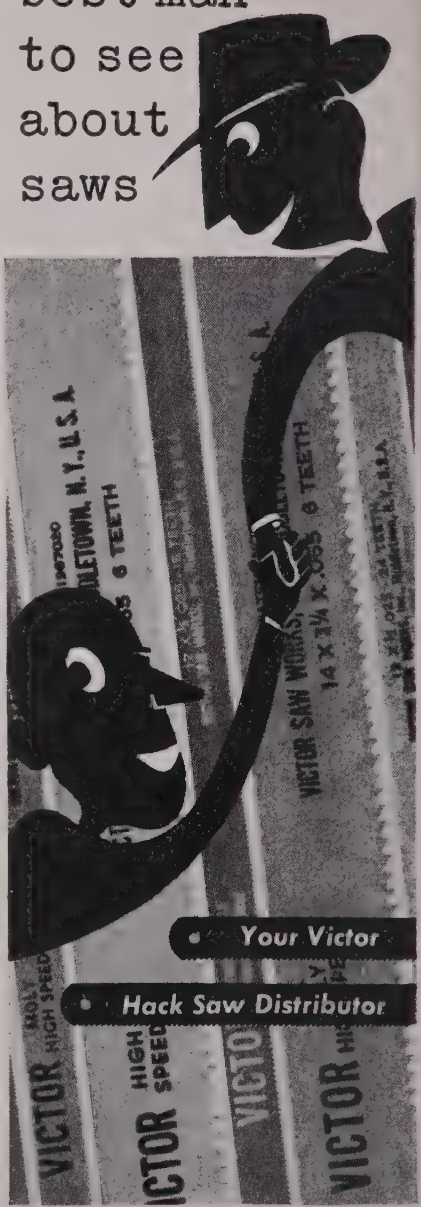

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chairmanship, with Chas. F. Lewis, metallurgical engineer, Cook Heat Treating Co. and K. L. Fetters, special metallurgical engineer, Youngstown Sheet & Tube Co., as new members.

J. B. Austin, director of research, U. S. Steel Corp., is the new member of the ASM Finance Committee.

On the Metal Progress Advisory Committee, two new names will appear during the current year; J. G. Hanawalt, manager Magnesium Div., Dow Chemical Co. and Howard Scott, manager, Metallurgical and Ceramic Depts., Westinghouse Electric Corp.

J. B. Johnson, Chief Materials Laboratory, Air Materials Command, Dayton, becomes chairman of the Metals Handbook Committee, with three new members appointed: Peter Payson, Crucible Steel Co. of America; M. Hansen, Associate Professor, Illinois Institute of Technology and Bruce W. Gonser, Battelle Memorial Institute.

The ASM Publications Committee names a new chairman—Robert H. Aborn, Dept. of Physical Metallurgy, U. S. Steel Corp. New members of this committee include: C. C. Donoho, chief metallurgist, American Cast Iron Pipe Co.; W. M. Baldwin, Jr., research professor, Case Institute of Technology; Edgar Brooker, U. S. Spring & Bumper Co.; W. E. Mahin, chairman Metals Research, Armour Research Foundation; and Alvin J. Herzig, Experimental Laboratory, Climax Molybdenum Co.

Max Gensamer, Carnegie-Illinois Steel Corp., becomes chairman of the Seminar Committee of ASM, with four new members added. They are: Clarence Zener, Institute for the Study of Metals, University of Chicago; Morris Cohen, Professor of Metallurgy, M.I.T.; John H. Hollomon, Research Laboratories, General Electric; and R. M. Brick, Director of Metallurgical Engineering Dept., University of Pennsylvania.

A. E. White, Director of Engineering Research, University of Michigan, will represent ASM in the National Assn. of Corrosive Engineers.

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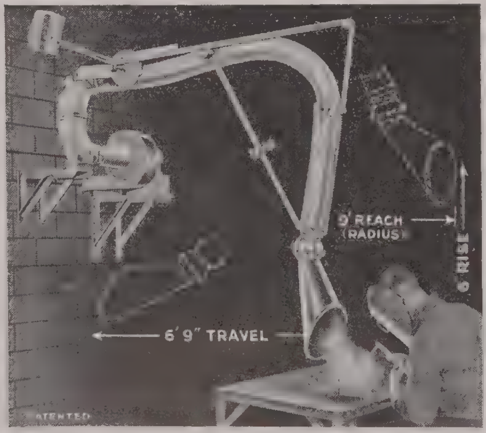

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Interim Freight Rate Increase Boosts The Costs of Steelmaking

Chicago

• • • **Steel making costs** went up recently when the Interstate Commerce Commission authorized a 4 to 6 pct interim increase in freight rates. The increases were not itemized in cents per ton by the ICC. The cost of hauling coal out of Kentucky and West Virginia to Chicago is a major item to Chicago steel producers.

It appears likely that the new 6 pct increase on coal will go into effect by Jan. 8. The new rates will be superimposed on the present rate structure and will remain in effect until the Interstate Commerce Commission decides on the carriers' application for a 13 pct permanent rate boost.

In that application, the railroads have asked that coal and coke rates be increased 40¢ a ton and 45¢ a gross ton. Since June 30, 1946, freight rates have been raised five times by the ICC. Average freight rates on coal, according to the American Coal Sales Assn., will be approximately 52 pct higher than the June 1946 level when the new scale becomes effective.

Iron Castings Exhibited At Engineering Schools

Cleveland

• • • **Under the auspices** of northern Ohio management group of Gray Iron Founders' Society, a display of gray iron castings has been installed at Case Institute of Technology. The exhibit is under the direction of a special group committee headed by Walter Seelbach, president, Superior Foundry, Inc., and John M. Price, president, Ferro Machine & Foundry Co., Cleveland. There will be a complete change of the entire exhibit twice during each school year.

The display consists of unfinished and machined castings. There are also sample cores and cut-away sections intended to give students a clear idea of what gray iron castings are, how they are made and used.

This is the first of a series of exhibits in leading engineering institutions all over the U. S., being installed by GIFS in the respective localities as a part of a nation-wide educational and sales promotional program designed to impart accurate knowledge of the engineering advantages and benefits to be derived through the use of the products of the industry.

Gray Iron Founders Meet

Muskegon, Mich.

• • • **At a meeting** of management executives of gray iron foundries in northwest Michigan, a Muskegon group of Gray Iron Founders' Society was organized, with the following officers elected to serve for the ensuing year:

Chairman, Donald A. Paull, Sealed Power Corp.; vice-chairman, William R. Johnson, Campbell, Wyant & Cannon Foundry Co.; treasurer; Clifford J. Lonnee, Clover Foundry Co., and chairman of the membership committee, David J. Vail, Campbell, Wyant & Cannon Foundry Co., all of Muskegon; secretary, Raymond E. Gilbert, Great Lakes Foundry & Machine Corp., Ludington, Mich.

Raymond L. Collier, executive vice-president, Gray Iron Founders' Society, told the group about the work the society is doing to bring together specifications for installations which would reduce "smog" and dust thrown off by foundry cupolas in order to meet local ordinances without the expenditure of large amounts of money for such installations.

George W. Cannon, president, Campbell, Wyant & Cannon Foundry Co., gave a brief report on the new foundry department which is being installed in the Muskegon trade school.

Develops New Ship Propeller

Los Angeles

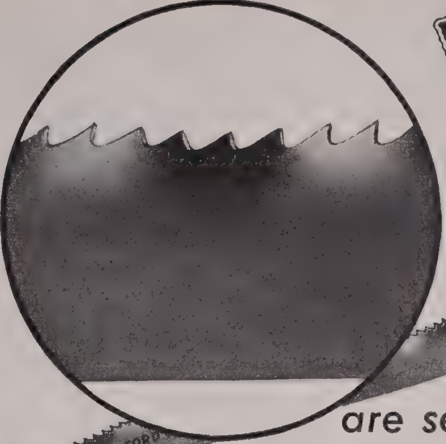
• • • **Speed of the** "work horses of the sea" will be increased by about one and a quarter knots as Liberty ships become equipped with a new propeller developed by Bethlehem Steel Co., shipbuilding division.

This increase will compensate for the speed lost when the American Bureau of Shipping ruled that shaft speeds of these ships must be cut from 76 rpm to 66 rpm to reduce tailshaft failures. The ABS had found that 22 pct of the Liberties inspected within a year were afflicted with this condition.

MILFORD

WAVY SET

BAND SAW BLADES



are setting new cutting records especially on horizontal band saw machines everywhere!

Users tell us . . . these Wavy Set blades are cutting better than 30% more metal . . . 50% more they say, on stainless steel . . . than any standard raker set blade. And cutting at closer tolerances!

Why? Just three major reasons tell the story . . .

Individually packed in cartons for easy handling.

FIRST . . . the teeth are set into the back of the saw, which means added strength . . . and practically no tooth rippage.

SECONDLY . . . the wave helps clear the chips from the cutting area . . . resulting in straighter cutting and material increase in blade life.

THIRD . . . made by saw specialists . . . the originators of the WAVY SET BLADE . . . who have incorporated new principles in basic design and heat treatment.

Order from your Mill Supply Distributor. He is always ready to serve your needs for all industrial supplies, including MILFORD hack saw and band saw blades.

You owe it to yourself to test a Wavy Set blade on your own machine . . . right away.

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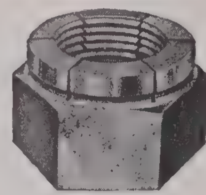
PROFILE AND BAND SAW BLADES
REZISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.
Saw Specialists Exclusively for over 70 Years
NEW HAVEN 5, CONNECTICUT, U. S. A.



THEY'RE BOTH "SELF-LOCKERS"

UNBRAKO
Reg. U. S. Pat. Off.

"Unbrako" Socket Set Screw with Knurled Cup Point.
Pat'd. & Pats. Pend.

FLEXLOC

"Flexloc" Self-Locking Nut — one-piece, all-metal, full-threaded.
Pat'd. & Pats. Pend.

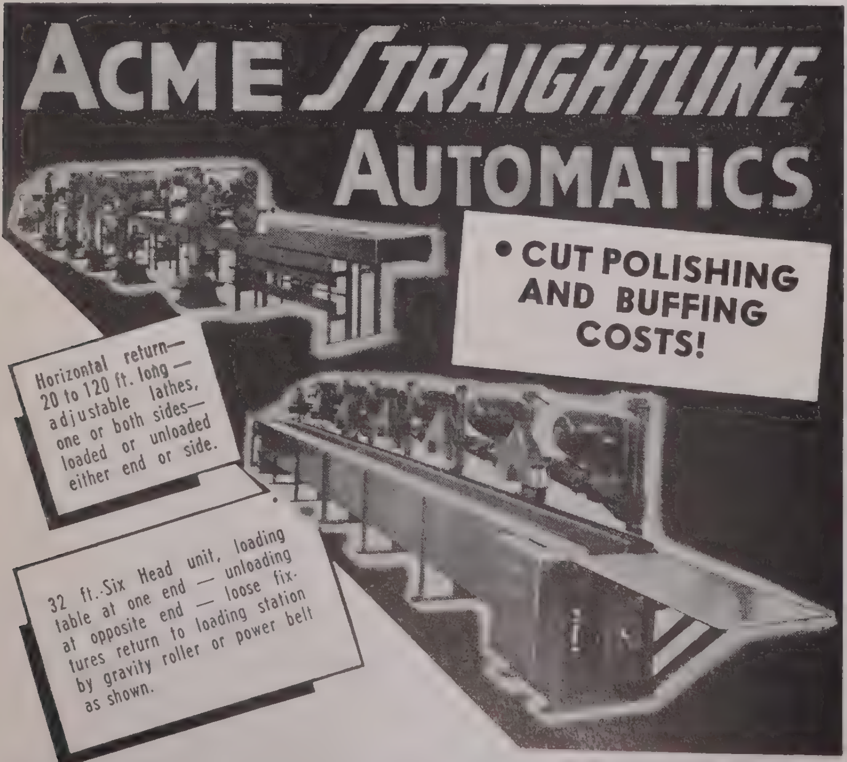
The patented KNURLED cup point of this popular "Unbrako" Socket Set Screw makes it a Self-Locker . . . because the keen edges of the counter-clock-wise KNURLS *positively prevent creep*, regardless of the most chattering vibration. A real fastener, if ever there was one . . . *positively will not shake loose!* Sizes from #4 to 1½" diameter, full range of lengths.

Because it is one-piece, all-metal, full-threaded and resilient . . . and, because it is a rugged "Stop", "Lock", and "Plain" nut *all in one*—processed to have an exceptionally uniform and long-lasting torque—the "Flexloc" Self-Locking Nut is becoming widely accepted. Request samples.

Write for the name and address of your nearest "Unbrako" Industrial Distributor and for the "Unbrako" and "Flexloc" Catalogs.

Over 46 Years in Business

STANDARD PRESSED STEEL CO.
JENKINTOWN, PENNSYLVANIA BOX 523
CHICAGO • DETROIT • ST. LOUIS • SAN FRANCISCO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• CUT POLISHING AND BUFFING COSTS!
Horizontal return— 20 to 120 ft. long— adjustable lathes, one or both sides— loaded or unloaded either end or side.
32 ft. Six Head unit, loading table at one end — unloading at opposite end — loose fixtures return to loading station by gravity roller or power belt as shown.

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ACME Manufacturing Co.
1845 HOWARD ST. DETROIT 16, MICH.
Builders of [illegible]

Space Heater Orders Up Due to Fuel Shortages

Pittsburgh

• • • **Fuel shortages** in various parts of the country have resulted in an increase of orders for direct-fired space heaters with combination burners, according to a survey of sales made here by the heating division of Dravo Corp.

During 1947, to meet the need for a heater with quickly interchangeable burners for two different types of fuel, Dravo developed a combination unit convertible from gas to fuel oil, or vice versa, in not more than 10 min. Either a light oil burner or a heavy oil burner is provided.

A substantial number of combination gas-oil fired heater orders so far this year have been received from industries where gas is used for processing applications, like drying kilns or curing ovens, as well as for space heating. Because the heaters can be switched over quickly to fuel oil during peak gas load periods, the limited supply of gas is made available for the processing burners. Moreover, many firms using combination heaters can take advantage of the peak load "cut-off rates" offered by gas companies without risking shutdowns due to inadequate space heating.

Bulk of the combination heater sales has been in the midwest where, according to recent government reports, the worst shortages of natural gas were expected to occur this season.

Basic Refractories Buys WAA Magnesite Mine

Cleveland

• • • **Purchase from** War Assets Administration of a large deposit of magnesite in the Paradise Mountain Range at Nye County, Nev., together with an adjacent ore dressing and calcining plant was announced this week by Howard P. Eells, Jr., president of Basic Refractories, Inc.

Included in the purchase is a large rotary kiln and accessories from the Government-owned alumina plant at Baton Rouge, La.

The ore processing plant, located near the company's Nevada mines, was designed, built and operated for the Government dur-

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Our men have accumulated many valuable years of experience. Enlist their experience the next time you need screw machine parts. Send us your prints today

BAR CAPACITY
3/64" to 5 1/2"dia.

ALL SECONDARY OPERATIONS

U·S·Automatic
CORPORATION
Amherst, Ohio

ing the war by a former subsidiary of Basic Refractories, Basic Magnesium, Inc., to produce magnesium metal.

Through the addition of the Baton Rouge kiln and complementary facilities the plant will be converted to the production of magnesia refractories supplementing the manufacturing operation in which the company is presently engaged at its Maple Grove, O., works.

Conversion plans provide for the addition of a second rotary kiln at a later date. Production at Nevada is expected to start July 1, at which time the company will be producing a complete line of basic granular refractories, Mr. Eells stated.

In addition to the purchase, the transaction with WAA embraces the lease of an adjoining town and utility systems that were constructed by the Government to accommodate operating personnel.

Property purchased and leased consists of 45-lode mining claims comprising approximately 800 acres; 10 mill-site claims totaling 50 acres and 39 placer claims aggregating 4000 acres.

Exports Helping Britain

London

• • • **Three weeks** before the end of 1948 Britain had achieved her export target for the year. This means that 3 years after the end of the war Britain succeeded in building up her exports by half as much again as they were in 1938.

Industrial production is up 20 pct over 1938; agricultural production is up 20 pct above prewar; exports to the Western Hemisphere, on which Britain depends largely to reduce the dollar drain, have risen from a monthly average of $66 million during the second half of 1947 to nearly $84 million in the first 6 months of 1948. Slowly but surely the gap between exports and imports is closing so that now Britain can look forward to covering her dollar drain during 1949, by keeping up her efforts and by the aid of the United States and Canada under the European Recovery Plan.

Britain intends to produce and export still more in the next 3 years so that by 1952 she will be completely independent of outside aid.

Greater Tonnage Per Edge of Blade

AMERICAN
SHEAR KNIFE CO.
HOMESTEAD · PENNSYLVANIA

MACHINE TOOLS

. . . News and Market Activities

Sales Volume Continues to Drop Steadily in Most Sectors

• • • **Machine tool** sales barometers this week were as unsettled as the weather and dropping steadily in many sectors.

Also in evidence was a corresponding drop in the optimism which pervaded many segments of the machine tool industry a month ago, which may have been inspired by the action of many companies in cleaning up remaining appropriation money before the year-end.

But if sales of new machines were off, buyers were not flocking to the doors of used machinery dealers, who reported their business has been in the doldrums since the first of the year, with production machines getting greater sales play than tool room equipment.

Machine tool sellers in the Chicago area report that January sales volume so far is about equal to December and November of last year. Keen competition exists with the outside men having to really sell. All sellers of machine tools report that there is a definite caution or holding back on commitments for capital expenditure. Manufacturers or buyers of machine tools in the Chicago area are not resisting as greatly as are buyers in the western part of the state and some parts of Iowa.

Generally, the buyer's caution is blamed by sellers of machine tools not so much on the political situation as it is on the fact that production has slowed down in many lines, backlogs are becoming current, new inquiry volume for products has declined, and manufacturers are merely gaging their new expenditures with current business.

No important price changes in any lines have been made in the past 30 days in Chicago. One manufacturer made some price adjustments, which were minor, the prices of some machines going up and others going down. Actually there is no real price resistance, machine tool people report. The buyers squawk a little bit, but if they need the machinery they buy it without trying to bargain over price. Some machine tool manufacturers imply that it might be possible, provided there is no general labor increase or steel increase, for them to sell machines cheaper later on in the year. They are hard after their foundry suppliers to cut the prices of castings and with foundry business as slow as it is, they expect to be successful.

Buyers Not Flocking to Doors of Used Machinery Dealers Despite Sales Declines

° ° °

Regrets

New York

• • • A statement in the issue of Jan. 20 . . . that one machine tool plant had orders for ECA totaling $9 million . . . was in error according to machine tool industry sources. If this statement has caused embarrassment it is regretted. The source of the original report was believed to have been reliable.

Thirty days ago the best delivery promise which could be obtained on large presses was something like six months. Today the promises are much closer to two months and the business volume in this particular item in the Chicago area is very good. The reasons given for better delivery are simply that the steel items going into presses, heavy plates, have become a little easier to get and production has been stepped up. ECA and export business is still of minor consequence in this area, although most machine tool builders and sellers expect it to pick up in the second quarter.

In Detroit, requests for new and refigured proposals continue to roll in to machine tool sources, but the amount of new buying is disappointing. With few exceptions, purchases of standard machines and new press equipment have failed to reach even the modest expectations that were held a few months ago. There is a continuing interest in special purpose machines, but commitments are very light.

During the past week orders were placed in Detroit by the new General Motors Research Center for a moderate volume of new equipment. Meanwhile, there is a continuing air of expectancy about Ford's plans for its new automatic transmission. Informed sources believe a definite break in this program can be anticipated within 90 days. It is known that Ford's tooling department is working feverishly and some sources believe a new Ford engine program may also be on the drawing boards.

Die shops and foundries in this area continue to operate on greatly curtailed schedules and the outlook at the moment is for an indefinite continuation of the present low rate of operations.

There Go 3269 Fasteners!

Tonight's test is tough . . . Doc Smith must get through . . . he's depending on the miracle of American mass production and (unknowingly) on the 3269 fasteners that give his car strength and stamina.

Over 500 screws . . . 331 nuts . . . 400 bolts . . . hundreds of rivets . . . furnish the forces that lock automobile assemblies together.

With this responsibility that fasteners must carry, it is obvious that quality is essential. That's why Russell, Burdsall & Ward makes the huge investment it does—in wire drawing mills of its own, in wire preparation, in laboratory equipment for extensive research, in advanced designs of equipment—all of which contribute to quality control.

Fastener *quality* and production savings go hand in hand. It isn't the initial price but the cost of *using* fasteners that counts. True Fastener Economy lies in *saving* assembly time, *reducing* the need for plant inspection, *getting* maximum holding power per dollar of fastener cost.

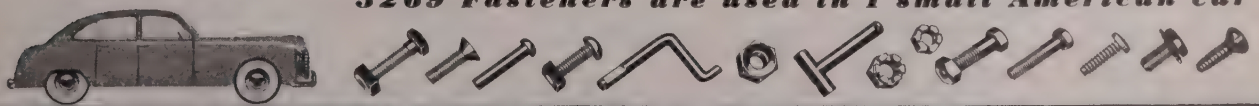
True Fastener Economy contributes to the kind of production savings that puts millions of new cars in U. S. driveways every year. It is this type of contribution to major American industries that explains why—for over 104 years—RB&W has been *making strong the things that make America strong.*

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

RB&W

Plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

3269 Fasteners are used in 1 small American car



104 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Ingot and Scrap Prices Drop Sharply Due to Market Inactivity

Lead Supply in Good Balance; Market Generally One of Inventory Reduction

○ ○ ○

New York

• • • **Inactivity in** the ingot markets has caused further sharp reductions in the prices of ingots and scrap. One brass and bronze ingot producer announced price decreases of 1¢ on red brass grades and ½¢ on yellow ingot and No. 245. The secondary aluminum market was still soft and there were lower market prices in a number of grades.

Buying of scrap has been practically suspended by most ingot makers, except from dealers who have been suppliers for a long time. Refiners have reduced their buying prices for copper and brass grades now that competition from ingot makers is no longer a factor.

The smelting charge for battery lead is variously quoted at from $60 a ton to $80 a ton in the Midwest. Other lead smelters are completely out of the market. This charge is set so high as to permit smelters to make a profit above their costs. It is an indication that factors in the secondary market consider that the price of lead is due for a fall.

The lead market is in better balance at present than during the last two years. Consumers are able to get all the metal they need. Premium prices are no longer being paid for foreign or secondary lead.

Primary producers of lead, taking the long view, scout the prospect of any early change in the lead market. They say that the situation in the metals market is generally one of inventory reduction due to the high prices at which they are selling. They point to the indices of business activity which show that the volume of activity is being maintained. There are two principal causes of the easier current market. One is the decline in the replacement battery business due to the mild winter in the East. The other is the heavy volume of imports permitted by the current high lead price and the suspension of the tariff last June. Stockpiling is still cutting down on available tonnages and the growing use of high compression engines for automobiles is expected to build the demand for tetraethyl lead significantly.

Monthly Average Prices

• • • **The average prices of the major nonferrous metals in January based on quotations appearing in THE IRON AGE, were as follows:**

	Cents Per Pound
Electrolytic copper, Conn. Valley	**23.50**
Lake copper, Conn. Valley	**23.625**
Straits tin, New York	**$1.03**
Zinc, East St. Louis	**17.50**
Zinc, New York	**18.18**
Lead, St. Louis	**21.30**
Lead, New York	**21.50**

The position of zinc is quite different. The heaviest demand is for galvanizing, and Prime Western is the most difficult grade to obtain. There has been some decline in demand for die castings but this factor has apparently been overemphasized in some quarters. Special High Grade is still not freely available. All other grades but this are in extremely short supply. Consumers no longer have the possibility of buying additional tonnages from the Metals Reserve stockpile since it has been transferred to Munitions Board control. Stockpiling of slab zinc by the government continues despite the shortage.

Consumption of slab zinc during 1948 has been estimated by the American Zinc Institute at 806,000 tons, an increase from 780,675 tons in 1947. The tonnage consumed in galvanizing has grown to 365,000 tons. Zinc base alloys consumed 232,000 tons, considerably higher than in previous years due largely to a market situation caused by the high price and scarcity of secondary aluminum ingots. Brass products consumed only 108,000 tons of zinc plus an unreported tonnage of scrap. This figure is less than half the requirements of the war years. Rolled zinc required 77,000 tons. Oxides and other uses took only 24,000 tons.

The copper market is still in short supply. There is no change in the Kennecott Copper Corp. strike. Until some solution is reached in the strike there is small likelihood of bringing the copper market into better balance, especially when the stockpiling program is taking 10,000 tons a month out of the market. The copper strike causes a loss of 23,000 to 24,000 tons of copper a month.

There were no changes in metals prices.

Nonferrous Metals Prices

	Jan. 26	Jan. 27	Jan. 28	Jan. 29	Jan. 31	Feb. 1
Copper, electro, Conn.	**23.50**	**23.50**	**23.50**	**23.50**	**23.50**	**23.50**
Copper, Lake, Conn.	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**
Tin, Straits, New York	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**
Zinc, East St. Louis	**17.50**	**17.50**	**17.50**	**17.50**	**17.50**	**17.50**
Lead, St. Louis	**21.30**	**21.30**	**21.30**	**21.30**	**21.30**	**21.30**

Curtails Operations

Buffalo

• • • **The Dunlop Tire** & Rubber Corp. has curtailed its plant operations in the town of Tonawanda from 5 to 4 days weekly because of large tire inventories. A spokesman said the short work week, affecting 1400 to 1500 employees, will probably remain in effect for 3 or 4 weeks. There have been no layoffs.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	23.50
Copper, lake, Conn. Valley	23.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110 to $115
Lead, St. Louis	21.30
Lead, New York	21.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$90 to $92
Nickel, electro, f.o.b. New York	42.90
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$89 to $93
Silver, New York, cents per oz.	70.00
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	17.50
Zinc, New York	18.198
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	19.00*	22.00
No. 120	18.50*	21.50
No. 123	18.00*	21.00
80-10-10 ingot		
No. 305	....	27.25
No. 315	....	24.25
88-10-2 ingot		
No. 210	....	33.00
No. 215	....	31.00
No. 245	23.25*	25.75
Yellow ingot		
No. 405	16.50*	17.50
Manganese bronze		
No. 421	....	23.00

* F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	28.75-29.25
0.60 copper, max.	28.50-29.00
Piston alloys (No. 122 type)	24.75-25.25
No. 12 alum. (No. 2 grade)	24.00-24.50
108 alloy	24.50-25.00
195 alloy	24.75-25.25
13 alloy	28.75-29.25
AXS-679	24.50-25.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95 pct-95½ pct	26.25-26.75
Grade 2—92 pct-95 pct	25.00-25.50
Grade 3—90 pct-92 pct	24.00-24.50
Grade 4—85 pct-90 pct	23.25-23.75

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	40⅛
Electrodeposited	34⅝
Rolled, oval, straight, delivered	37.34
Ball anodes	38⅝
Brass, 80-20	
Cast, oval, 15 in. or longer	35⅞
Zinc, oval, 99.99	
Ball anodes	20.50
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.10
Silver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	46.00
Copper sulfate, 99.5 crystals, bbls.	9.10
Nickel salts, single or double, 100 lb bags, frt. allowed	20.00
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz. lots, per oz.	59
Sodium cyanide, 96 pct domestic 100 lb drums	16.00
Zinc sulfate, crystals, 22.5 pct, bags	
Zinc sulfate, 25 pct, granules, bbls. frt. allowed	

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft. per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	....	37.18
Copper, hot-rolled	....	33.03	....
Copper, drawn	....	34.28	....
Low brass	38.57*	35.35	35.66
Yellow brass	37.60*	34.28	34.59
Red brass	38.92*	35.70	36.01
Naval brass	34.90	33.65	39.59
Leaded brass	....	29.24	....
Commercial bronze	39.54*	36.57	36.88
Manganese bronze	38.49	36.99	43.09
Phosphor bronze, 5 pct	57.80*	56.30	56.05
Muntz metal	34.47	33.22	37.66
Everdur, Herculoy, Olympic, etc.	40.49	40.76	41.82
Nickel silver 10 pct	....	47.17	44.77
Architectural bronze	33.42	....	....

* Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 lb or more)

	Heavy	Turnings
Copper	21⅛	20⅝
Yellow brass	18⅞	18⅛
Red brass	20	19¼
Commercial bronze	20⅛	19⅝
Manganese bronze	18¾	17⅞
Leaded brass rod ends	18⅛	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper wire	20.00-20.25
No. 2 copper wire	19.00-19.25
Light copper	18.00-18.25
Refinery brass	18.00-18.25

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	19.75
No. 2 copper, wire	18.75
Light copper	17.75
No. 1 composition	14.50-15.00
No. 1 comp. turnings	14.25-14.75
Rolled brass	12.75-13.25
Brass pipe	13.25-13.75
Radiators	13.75-14.00
Heavy yellow brass	12.00-12.25

Aluminum

Mixed old cast	14.25-14.50
Mixed old clips	14.25-14.75
Mixed turnings, dry	13.50-13.75
Pots and pans	14.50-15.75
Low copper	17.75-18.25

Dealers' Scrap

(Dealer's buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire.	18 —18½
No. 2 heavy copper and wire.	17 —17½
Light copper	16 —16½
Auto radiators (unsweated).	11½—11¾
No. 1 composition	13¼—13½
No. 1 composition turnings	12¾—13
Clean red car boxes	11 —11½
Cocks and faucets	11 —11½
Mixed heavy yellow brass	8 — 8½
Old rolled brass	10½—11
Brass pipe	11¾—12¼
New soft brass clippings	15 —15½
Brass rod ends	12½—13
No. 1 brass rod turnings	12 —12½

Aluminum

Alum. pistons and struts	6½— 7
Aluminum crankcases	10 —10½
2S aluminum clippings	14 —14½
Old sheet & utensils	10 —10½
Borings and turnings	5 — 5½
Misc. cast aluminum	10 —10½
Dural clips (24S)	10 —10½

Zinc

New zinc clippings	10½—11
Old zinc	9 — 9½
Zinc routings	5¼— 5¾
Old die cast scrap	5½— 6

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	22 —23
Nickel rod ends	21 —22
New Monel clippings	15½—16½
Clean Monel turnings	11 —12
Old sheet Monel	13 —14
Old Monel castings	10 —11
Inconel clippings	12 —13
Nickel silver clippings, mixed	8 — 8½
Nickel silver turnings, mixed	7 — 7½

Lead

Soft scrap lead	17 —17½
Battery plates (dry)	10 —10¼

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	82 —84
No. 1 pewter	65 —67
No. 1 auto babbitt	51 —53
Mixed common babbitt	19 —19½
Solder joints	21½—22½
Siphon tops	50 —52
Small foundry type	20 —20½
Monotype	19 —19½
Lino. and stereotype	18½—19
Electrotype	17 —17½
New type shell cuttings	15 —15½
Hand picked type shells	6 — 6½
Lino. and stereo. dross	9½—10
Electro. dross	6 — 6½

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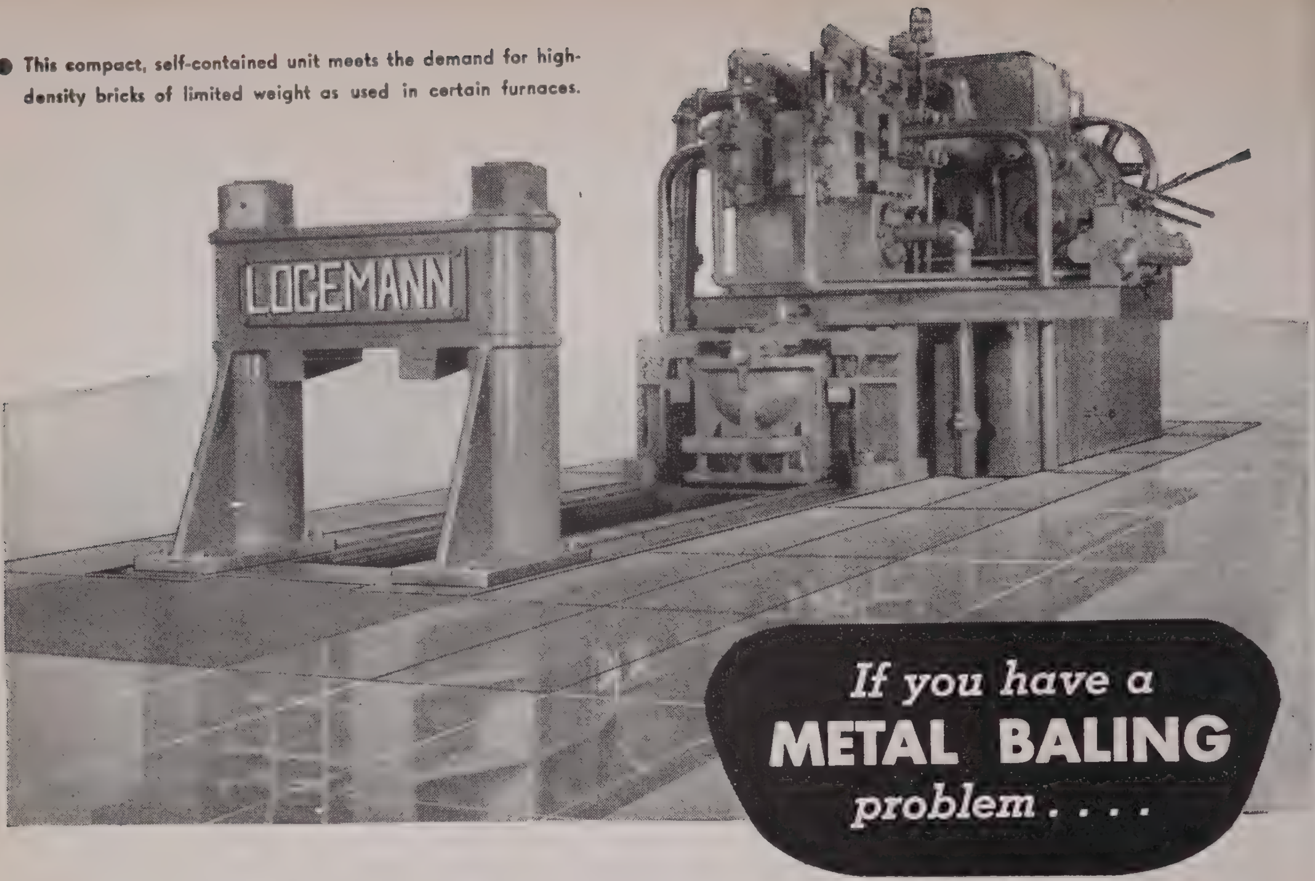

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Prices Drop Further; Have Not Hit Bottom

New York

• • • Scrap prices are still dropping. Cast grades are doing more—they're plunging. Few are using the phrase that the bottom is dropping out of the market because no one can see where the bottom is. Some cast grades have dropped almost $20 a ton over a period of 6 weeks. There are few sales. There is practically no demand. Prices quoted are nominal. Even brokers are turning down offers because they don't know what to do with them. Mills are comfortably situated with inventories that are expected to keep them out of the market until possibly Mar. 1.

Isolated sales here and there have brokers and dealers jumping at the gun hoping that they will be indicative of something or other. About the only thing these sales can be used for is set up some sympathetic alignment of prices for corresponding grades. Nobody knows where the market is headed. And few are trying to figure it out. They are just riding along hoping for a break where they can get their feet in the door.

Heavy melting grades have dipped again in Chicago, Buffalo and Cincinnati. They are weak in other market areas. Indicators point to further drops. What will happen here, too, is anybody's guess.

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PITTSBURGH—Until snow fell early this week shipments were holding up well on old orders but little new business has been done. If nothing else the snow reminded the trade here that the open winter has put a lot of material into mill stocks that would otherwise have not been prepared. This of course cuts down the reservoir of scrap that is normally ready for tapping in the spring. Biggest deal of the past week was a substantial purchase of short shoveling turnings for blast furnace use at a flat $35.50, delivered Pittsburgh. This brought the other turnings down proportionally in sympathy. Cast iron buys are few and far between, but based on offers and broker buying mixed yard cast is quotable at $49 to $51 a gross ton. Other cast grades were also weaker.

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CHICAGO — Last mill buying prices don't mean a thing. They are so old they have ceased to reflect the market. In fact there was no market in Chicago last week except on turnings and borings. These sales took place about $5 under the previous prices paid for turnings. The only major items which can in any way be gaged by last mill prices are No. 1 heavy melting and No. 1 bundles. For these reasons dealer scrap in this issue is based on legitimate offers by brokers to sell to local mills, and actual sales to smaller mills outside the immediate area. The local mills didn't buy and it appears they won't for some time. Railroad specialties are a little different. This market is thin, but at least it exists. The $40 floor established under No. 1 earmarked scrap, observers here consider, just as artificial as the former $42 controlled floor price.

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PHILADELPHIA—There was no new buying of any grade of scrap in this market last week, so quoted prices are nominal. The end of the month will see the end of practically all brokers' orders. There has been an increase in the number of rejections. Mills are eating into their inventories expecting to place business at lower prices. Dealers report yard inventories to be very low. In the uncertainty as to price, they are hesitant about taking up offerings. Yards are piling up cast because of continued inactivity. Low phos grades are not moving. All factors in the market are waiting for the new price levels to be set by renewed buying by mills and pipe foundries.

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CLEVELAND—Mills generally are out of the market here, but a Warren consumer put out a 20,000 ton low phos order last week on a sliding scale that pegged temporarily a weakening market. The order works like this: Local tonnage, $44 delivered plant; tonnage carrying less than a $3.55 freight, $45 delivered plant; tonnage carrying more than a $3.55 freight, $46.50 delivered plant. Brokers are covering at $1 under in each case. Trade opinion is divided, but buyers and brokers generally believe the market has settled itself for the time being, particularly in view of the bad weather. Mills may not come back in for substantial tonnages until Mar. 1, but in the absence of sales, broker offerings will probably continue to weaken the market to some extent on all grades.

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DETROIT—The possibility of a free scrap market at Detroit moved nearer this week as Buick, Fisher body and Ternstedt offered partial scrap lists, some for the first time since the war. In the meantime, it is reported that most steel mills have declined to accept turnings, adding further to the pronounced sag in that segment of the market. At the moment there is hardly a scattering of buying here—usually to cover an old order. Neither of the Detroit mills has indicated the price it will offer for scrap during February. Until awards are made on the basis of the new lists it is expected that the present confusion about local markets is destined to continue.

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CINCINNATI—Mills are out of the market except for an occasional short order which serves to weaken a market that is already staggering. Foundries are out. Old orders, most of which are due to run out within the next few days are providing a small artificial demand at the moment. Nobody seems to be able to find a price at which any major consumer, mill or foundry, will come in for a substantial tonnage.

•

NEW YORK—Prices remain more or less nominal in a market which sees few sales made. Heavy melting prices remained the same this week but were weak. Cast prices dipped further, remained weak and showed no signs stabilizing even at present levels. Stocks at mills appear good enough for around 60 days, reliable sources report. There was a typographical error in last weeks quoted prices for heavy breakable and charging box cast. Prices for these grades should have read $42 to $43.50.

•

BOSTON—A substantial drop of No. 1 and 2 machinery cast to new low prices of $48 and $45 respectively highlighted the volatile scrap market here. Heavy breakable and stove plate fell slightly as well. No. 1 heavy melting remained at $34.40 but most other prices weakened somewhat in what is now a day by day market. Some brokers are still reluctant to quote prices.

•

BIRMINGHAM—The bottom has dropped out of the cast iron market here. No. 1 cupola cast has been offered at a price of $50 without any takers. One small order of mixed cast at $44 is reported. In the overall picture there is very little trading for any grade. The price decline has halted accumulations by dealers and inclement weather has hampered scrap preparation.

•

BUFFALO—Openhearth and blast furnace scrap was lowered a dollar across the board this week as consumers continued to hold aloof. No. 1 heavy melting was quoted at $42 to $44; No. 2, at $38 to $39 and low phos at $43 to $45. Sales of machine shop and shoveling turnings were reported to nearby consumers at $34 and $36 respectively, Buffalo basis. Cast scrap was down another $2 to $48 to $50 for mixed yard stuff. So far as rail specialties were concerned, the New York Central list was expected to provide the cue later in the week.

IRON AND STEEL SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.50 to	$41.00
RR. hvy. melting	43.50 to	44.00
No. 2 hvy. melting	38.50 to	39.00
RR. scrap rails	53.00 to	54.00
Rails 2 ft and under	56.00 to	57.00
No. 1 comp'd bundles	40.50 to	41.00
Hand bdld. new shts.	40.50 to	41.00
Hvy. axle turn.	40.00 to	40.50
Hvy. steel forge turn.	40.00 to	40.50
Mach. shop. turn.	33.00 to	33.50
Shoveling turn.	35.00 to	35.50
Mixed bor. nad turn.	33.00 to	33.50
Cast iron borings	35.00 to	35.50
No. 1 mach. cast	58.00 to	59.00
Mixed yard cast	49.00 to	51.00
Hvy. breakable cast	49.00 to	51.00
Malleable	60.00 to	61.00
RR. knuck. and cup.	53.00 to	54.00
RR. coil springs	53.00 to	54.00
RR. leaf springs	53.00 to	54.00
Rolled steel wheels	53.00 to	54.00
Low phos.	45.50 to	46.50

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.00 to	$40.00
No. 2 hvy. melting	34.00 to	35.00
No. 1 bundles	38.00 to	40.00
No. 2 dealers' bundles	32.00 to	33.00
Bundled mach. shop turn.	29.00 to	30.00
Galv. bundles	28.00 to	29.00
Mach. shop turn.	27.00 to	28.00
Short shov. turn.	29.00 to	30.00
Cast iron borings	30.00 to	31.00
Mix. borings and turn.	27.00 to	28.00
Low phos. hvy. forge	44.00 to	44.50
Low phos. plates	42.00 to	42.50
No. 1 RR. hvy. melt.	40.00 to	41.00
Rerolling rails	50.00 to	52.00
Miscellaneous rails	44.50 to	45.00
Angles & splice bars	45.00 to	47.00
Locomotive tires, cut	48.00 to	49.00
Cut bolster & side frames	46.00 to	47.00
Standard stl. car axles	60.00 to	62.00
No. 3 steel wheels	47.00 to	48.00
Couplers and knuckles	47.00 to	48.00
Rails, 2 ft and under	49.00 to	50.00
Malleable	60.00 to	62.00
No. 1 mach. cast	50.00 to	52.00
No. 1 agricul. cast	48.00 to	50.00
Heavy breakable cast	48.00 to	49.00
RR. grate bars	45.00 to	46.00
Cast iron brake shoes	47.00 to	48.00
Cast iron car wheels	50.00 to	51.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$33.50 to	$34.00
No. 2 hvy. melting	33.50 to	34.00
No. 1 bundles	33.50 to	34.00
No. 2 bundles	33.50 to	34.00
Mach. shop turn.	28.50 to	29.00
Shoveling turn.	30.50 to	31.00
Cast iron borings	29.50 to	30.00
Mixed bor. & turn.	28.50 to	29.00
Low phos. 18 in. under	41.00 to	43.00
No. 1 cupola cast.	48.00 to	50.00
Hvy. breakable cast.	40.00 to	42.00
Rails 18 in. and under	52.00 to	54.00
Rails random length	44.00 to	46.00
Drop broken	53.00 to	55.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	....	$34.40
No. 2 hvy. melting	....	31.00
Nos. 1 and 2 bundles	....	32.50
Bushelings	....	31.00
Shoveling turn.	....	28.00
Machine shop turn.	....	26.00
Mixed bor. and turn.	....	26.00
Cl'n cast chem. bor.	$32.00 to	32.50
No. 1 machinery cast.	48.00 to	50.00
No. 2 machinery cast.	45.00 to	47.00
Heavy breakable cast.	....	49.00
Stove plate	....	49.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	$33.00 to	$34.00
No. 2 hvy. melting	33.00 to	34.00
No. 1 bundles	33.00 to	34.00
New busheling	33.00 to	34.00
Flashings	33.00 to	34.00
Mach. shop turn.	25.00 to	26.00
Machinery cast	53.00 to	55.00
Mixed yard cast	48.00 to	50.00
Shoveling turn.	26.00 to	27.00
Cast iron borings	28.00 to	29.00
Mixed bor. & turn.	25.00 to	26.00
Low phos. plate	38.00 to	39.00
Heavy breakable cast.	45.00 to	48.00
Stove plate	50.00 to	53.00
Automotive cast.	53.00 to	55.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.00 to	$42.00
No. 2 hvy. melting	39.00 to	39.50
No. 1 bundles	41.00 to	42.00
No. 2 bundles	38.00 to	38.50
Mach. shop turn.	34.00 to	34.50
Shoveling turn.	35.00 to	35.50
Mixed bor. and turn.	34.00 to	34.50
Clean cast chemical bor.	35.50 to	37.50
No. 1 machinery cost.	48.00 to	50.00
No. 1 mixed yard cast.	45.00 to	48.00
Hvy. breakable cast.	46.00 to	48.00
Hvy. axle forge turn.	41.00 to	42.00
Low phos. acid, openhearth	45.00 to	46.00
Low phos., electric furnace	47.00 to	48.00
Low phos. bundles	44.50 to	45.50
RR. steel wheels	50.00 to	51.00
RR. coil springs	50.00 to	51.00
RR. malleable	56.00 to	58.00
Cast iron carwheels	57.00 to	58.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.00 to	$40.00
No. 2 hvy. melting	34.00 to	35.00
Bundled sheets	33.00 to	35.00
Mach. shop turn.	25.00 to	26.00
Shoveling turnings	27.00 to	28.00
Locomotive tires, uncut	40.00 to	41.00
Mis. std. sec. rails	43.00 to	44.00
Steel angle bars	46.00 to	47.00
Rails 3 ft and under	50.00 to	52.00
RR. steel springs	44.00 to	45.00
Steel car axles	62.00 to	64.00
Brake shoes	43.00 to	45.00
Malleable	55.00 to	57.00
Cast iron car wheels	55.00 to	56.00
No. 1 machinery cast.	52.00 to	54.00
Hvy. breakable cast.	49.00 to	50.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	....	$35.00
No. 2 hvy. melting	....	35.00
No. 2 bundles	....	35.00
No. 1 busheling	....	35.00
Long turnings	$30.00 to	32.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	....	29.50
Bar crops and plate	38.00 to	40.00
Structural and plate	38.00 to	40.00
No. 1 cupola cast.	44.00 to	50.00
Stove plate	44.00 to	50.00
No. 1 RR. hvy. melt.	....	36.00
Steel axles	60.00 to	62.00
Scrap rails	42.00 to	44.00
Rerolling rails	55.00 to	58.00
Angles & splice bars	40.00 to	42.00
Rails 3 ft & under	40.00 to	42.00
Cast iron carwheels	61.00 to	63.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$38.50 to	$39.00
No. 2 hvy. melting	37.50 to	38.00
No. 2 bundles	37.50 to	38.00
Mach. shop turn.	33.00 to	33.50
Short shov. turn.	35.00 to	35.50
Cast iron borings	35.00 to	35.50
Low phos.	44.00 to	46.50

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$36.00 to	$37.50
No. 2 hvy. melting	33.50 to	34.50
No. 2 bundles	33.50 to	34.50
Mach. shop turn.	28.00 to	29.50
Mixed bor. & turn.	28.00 to	29.50
Shoveling turnings	30.00 to	31.50
Machinery cast.	43.50 to	45.00
Mixed yard cast.	42.00 to	43.50
Heavy breakable cast.	39.00 to	40.50
Charging box cast	39.00 to	40.50
Unstrp. motor blks.	38.00 to	39.50
Cl'n cast chem. bor.	32.50 to	33.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to	$44.00
No. 2 hvy. melting	38.00 to	39.00
No. 1 bundles	38.00 to	39.00
No. 2 bundles	38.00 to	39.00
No. 1 busheling	38.00 to	39.00
Mach. shop turn.	33.75 to	34.25
Shoveling turn.	35.75 to	36.25
Cast iron borings	34.75 to	35.25
Mixed bor. and turn.	33.75 to	34.25
Clean auto. cast.	57.00 to	58.00
Mixed yard cast.	48.00 to	50.00
Stove plate	48.00 to	50.00
RR. malleable	70.00 to	75.00
Small indus. malleable	40.00 to	42.00
Low phos. plate	43.00 to	45.00
Scrap rails	....	50.00
Rails 3 ft & under	56.00 to	57.00
RR. steel wheels	53.00 to	54.00
RR. coil & leaf spgs.	....	54.25
RR. knuckles & coup.	....	54.25

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to	$40.00
No. 2 hvy. melting	37.00 to	37.50
No. 1 bundles	37.00 to	37.50
No. 1 busheling	37.00 to	37.50
Drop forge flashings	37.00 to	37.50
Mach. shop turn.	31.50 to	32.00
Shoveling turn.	33.50 to	34.00
Steel axle turn.	37.00 to	37.50
Cast iron borings	33.50 to	34.00
Mixed bor. & turn.	33.50 to	34.00
Low phos. 2 ft and under	44.50 to	45.00
No. 1 machinery cast.	58.00 to	60.00
Malleable	68.00 to	70.00
RR. cast.	67.00 to	68.00
Railroad grate bars	50.00 to	52.00
Stove plate	52.00 to	54.00
RR. hvy. melting	41.00 to	41.50
Rails 3 ft and under	57.00 to	58.00
Rails 18 in. and under	59.00 to	60.00

SAN FRANCISCO

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27.50
No. 2 hvy. melting	....	27.50
No. 2 bales	....	27.50
No. 3 bales	....	24.50
Mach. shop turn.	....	18.00
Elec. fur. 1 ft under	$40.00 to	42.00
No. 1 cupola cast.	40.00 to	42.00
RR. hvy. melting	....	28.50
Rails	....	29.00

LOS ANGELES

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27.50
No. 2 hvy. melting	....	27.50
No. 1 bales	....	27.50
No. 2 bales	....	27.50
No. 3 bales	....	24.50
Mach. shop turn.	....	20.00
Elec. fur. 1 ft. under	$32.00 to	38.00
No. 1 cupola cast.	40.00 to	50.00
RR. hvy. melting	....	28.50

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	$30.00 to	$33.50
Elec. fur. 1 ft and under	36.50 to	40.00
No. 1 cupola cast.	40.00 to	40.50
RR. hvy. melting	30.00 to	32.50

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting		$23.00*
No. 1 bundles		23.00*
No. 2 bundles		22.50*
Mechnical bundles		21.00*
Mixed steel scrap		19.00*
Mixed borings and turnings		17.00*
Rails, remelting		23.00*
Rails, rerolling		26.00*
Bushelings		17.50*
Bushelings, new fact, prop'd		21.00*
Bushelings, new fact, unprop'd		16.00*
Short steel turnings		17.00*
No. 1 cast.	$48.00 to	50.00*
No. 2 cast.	44.00 to	45.00*

*Ceiling Price.

For the Purchase or Sale of
Iron and Steel Scrap . . .

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

	Feb. 1, 1949	Jan. 25, 1949	Jan. 4, 1949	Feb. 3, 1948
Flat-Rolled Steel: (cents per pound)				
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron.....	7.85	7.85	7.85	6.85
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes..	$7.75	$7.75	$7.75	$6.80
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	6.00
Special coated mfg. ternes	6.65	6.65	6.65	5.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.37	3.37	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)..	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	7.15
Wire: (cents per pound)				
Bright wire	4.256	4.256	4.256	3.55
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00†
Slabs, rerolling	52.00	52.00	52.00	45.00†
Forging billets	61.00	61.00	61.00	55.00†
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00†
Wire rod and Skelp: (cents per pound)				
Wire rods	3.619	3.619	3.619	2.80
Skelp	3.25	3.25	3.25	2.60

† Gross ton

Pig Iron: (per gross ton)	Feb. 1, 1949	Jan. 25, 1949	Jan. 4, 1949	Feb. 3, 1948
No. 2, foundry, Phila.....	$51.56	$51.56	$51.56	$44.61
No. 2, Valley furnace....	46.50	46.50	46.50	39.50
No. 2, Southern Cin'ti*...	49.46	49.46	49.47	43.28
No. 2, Birmingham......	43.38	43.38	43.38	37.38
No. 2, foundry, Chicago†	46.00	46.00	46.00	39.00
Basic del'd Philadelphia*.	50.76	50.76	50.76	44.11
Basic, Valley furnace....	46.00	46.00	46.00	39.00
Malleable, Chicago†.....	46.50	46.50	46.50	39.50
Malleable, Valley	46.50	46.50	46.50	39.50
Charcoal, Chicago	73.78	73.78	73.78	62.46
Ferromanganese‡	*161.40*	161.71	161.71	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

* Does not include interim increase on total freight charges, effective Jan. 11, 1949.

** Corrected.

	Feb. 1, 1949	Jan. 25, 1949	Jan. 4, 1949	Feb. 3, 1948
Scrap (per gross ton)				
Heavy melt'g steel, P'gh..	$40.75	$40.75	$42.75	$40.50
Heavy melt'g steel, Phila.	41.50	41.50	44.50	42.50
Heavy melt'g steel, Ch'go	*39.00*	39.50	41.75	39.50
No. 1, hy. comp. sh't, Det.	33.50	33.50	38.00	35.50
Low phos. Young'n......	*45.25*	47.00	47.75	47.75
No. 1, cast, Pittsburgh...	*58.50*	59.00	68.00	57.75
No. 1, cast, Philadelphia.	*49.00*	51.00	63.50	59.00
No. 1, cast, Chicago.....	*51.00*	53.50	61.00	67.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt...	$15.25	$15.25	$17.00	$12.50
Foundry coke, prompt...	16.75	16.75	17.00	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.....	23.50	23.50	23.50	21.50
Copper, Lake Conn......	23.625	23.625	23.625	21.625
Tin, Grade A, New York.	$1.03	$1.03	$1.03	94.00
Zinc, East St. Louis.....	17.50	17.50	17.50	12.00
Lead, St. Louis	21.30	21.30	21.30	14.80
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.90	42.90	42.90	36.56
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex...	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Feb. 1, 1949..........	3.75628¢ per lb..........	....$46.74 per gross ton....	......*$40.42* per gross ton......
One week ago	3.75628¢ per lb..........	....$46.74 per gross ton....	......$40.58 per gross ton......
One month ago	3.75628¢ per lb..........	....$46.82 per gross ton....	......$43.00 per gross ton......
One year ago.........	3.22566¢ per lb..........	....$40.17 per gross ton....	......$40.83 per gross ton......

	HIGH	LOW	HIGH	LOW	HIGH	LOW
1949....	3.75628¢ Jan. 1	3.75628¢ Jan. 1	$46.82 Jan. 4	$46.74 Jan. 25	$43.00 Jan. 1	$40.42 Feb. 1
1948....	3.75700¢ July 27	3.22566¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947....	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946....	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945....	2.44104¢ Oct. 2	2.54490¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944....	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943....	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942....	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941....	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940....	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939....	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938....	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937....	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936....	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935....	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934....	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933....	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932....	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931....	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1929....	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Established 1898

- Cast Iron
- Electric Furnace Grades
- Open Hearth
- Foundry Steel
- Sheet Iron for Baling
- Stainless Steel
- Non-Ferrous Metals

SCRAP

IRON AND STEEL

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Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 25¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas													
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
INGOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
BILLETS, BLOOMS, SLABS Carbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
PIPE SKELP	3.25						3.25				Warren =3.25				
WIRE RODS	3.40 to 4.15	3.40 to 3.90		3.40	3.40		3.65	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
SHEETS Hot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[15]	5.65
Cold-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.70	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes[2] (10 gage)	4.80		4.80							4.80					
STRIP Hot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	5.90
Cold-rolled[4]	4.00	4.25		4.00		4.00	4.00	4.90		New Haven 4.50 Warren=4.00 to 4.25		4.20 to 4.50			7.10
TINPLATE Cokes, 1.50 lb.[5] base box	$7.75	$7.75	$7.75		$7.85			$7.85	$7.95	Warren, Ohio =$7.75				Pittsburg, Cal.=$8.50	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50 lb. coke base box price														
TERNES MFG., special coated	Deduct $1.10 from 1.50 lb coke base box price														
BLACKPLATE CANMAKING 55 to 128 lb.	Deduct $2.00 from 1.50 lb. coke base box price														
BLACKPLATE, h.e., 29 ga.[10]	5.30	5.30	5.30					5.40		Warren, Ohio =5.30					
BARS Carbon Steel	3.35 to 3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	5.30
Reinforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	5.30
Cold-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[14]	5.50
Alloy cold-drawn	4.65 to 4.75	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
PLATE Carbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40 Conshohocken =3.95	3.45	3.40	3.45 Coatesville=3.75, Claymont=3.95 Geneva=3.40, Harrisburg=6.50				3.65	3.45	4.30[16]	5.80
Floor plates	4.55	4.55		4.55				Conshohocken =4.55							
Alloy	4.40	4.40							Coatesville=5.10						
SHAPES, Structural	3.25 to 3.30	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.85 to 4.30	5.75
MANUFACTURERS' WIRE[9] Bright	4.15 to 4.50	4.15 to 4.65		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[13]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth=5.20-6.15	
PILING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel 301	302	303	304	316	347	Straight Chromium 410	416	430
Ingots, rerolling	12.75	13.50	15.00	15.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging	24.25–26.50	24.25–26.50	26.25–28.75	25.50–27.75	39.00–42.75	32.75–35.75	19.50–21.50	20.00–21.75	20.00–21.75
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26.50
Sheets	37.50–40.75	37.50–40.75	39.50–43.00	39.50–43.00	53.00–57.25	50.00–54.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50–30.75	33.00–33.50	36.50–39.50	35.00–35.75	55.00–57.25	48.50–50.00	27.00	33.50	27.50

ELECTRODES

Cents per lb. f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢
High-carbon-chromium					52¢
Oil hardened manganese					29¢
Special carbon					26.5¢
Extra carbon					22¢
Regular carbon					19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

Base, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70 to 9.20
Dynamo	7.50 to 10.00
Transformer 72	8.05 to 11.80
Transformer 65	8.60 to 12.35
Transformer 58	9.30 to 13.05
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb.	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburgh, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

†CF&I and Inland, $3.50.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add **0.30¢.**

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless clad		
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Aluminized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.		9.25

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	Pittsburg, Calif.
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††	114	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

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* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth only.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

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‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dyn-alloy	HI Steel	Mayari R	Otis-coloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.40	5.65
Sheets									
Hot-rolled	4.95	4.95	4.95	5.25	4.95	4.95	4.95	5.15	5.25
Cold-rolled	6.05	6.05	6.05	.....	6.05	6.05	6.05	6.25	6.35
Galvanized	.....	6.75	.....	.....	.....	6.75	.....	.....	.....
Strip									
Hot-rolled	4.95	4.95	4.95	.....	4.95	4.95	4.95	5.15	5.25
Cold-rolled	.....	.....	6.05	.....	.....	6.05	6.05	.....	6.35
Shapes	.....	4.95	.....	.....	4.95	5.05	4.95	.....	.....
Beams	.....	4.95	.....	.....	.....	.....	.....	.....	.....
Bars									
Hot-rolled	5.10	5.10	5.10	.....	5.10	5.10	5.10	.....	5.40
Bar shapes	.....	5.10	.....	.....	5.10	5.10	5.10	.....	.....

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

STANDARD, THREADED AND COUPLED

Steel, buttweld	*Black*	*Galv.*
½-in.	43 to 41	20 to 18
¾-in.	46 to 44	24 to 22
1-in.	48½ to 46½	27 to 25
1¼-in.	49 to 47	27½ to 25½
1½-in.	49½ to 47½	28 to 26
2-in.	50 to 48	28½ to 26½
2½ to 3-in.	50½ to 49½	29 to 27
Steel, lapweld		
2-in.	39½	17½
2½ to 3-in.	39½	21½
3½ to 6-in.	46½ to 42	20½ to 24½
Steel, seamless		
2-in.	38½ to 27	16½ to 5
2½ to 3-in.	41½ to 35	19½ to 10½
3½ to 6-in.	43½ to 38½	21½ to 16½
Wrought Iron, buttweld		
½-in.	+20½	+52½
¾-in.	+10½	+41½
1 & 1¼-in.	+ 4½	+32½
2-in.	— 1½	+29
3-in.	— 2	+28½
Wrought Iron, lapweld		
2-in.	+ 7½	+36½
2½ to 3½-in.	+ 5	+32
4-in.	list	+26
4½ to 8-in.	+ 2	+27½

EXTRA STRONG, PLAIN ENDS

Steel, buttweld		
½-in.	42 to 40	20½ to 18½
¾-in.	46 to 44	24½ to 22½
1-in.	48 to 46	27½ to 25½
1¼-in.	48½ to 46½	28 to 26
1½-in.	49 to 47	28½ to 26½
2-in.	49½ to 47½	29 to 27
2½ to 3-in.	50 to 48	29½ to 27½
Steel, lapweld		
2-in.	39½	18½
2½ to 3-in.	44½	23½
3½ to 6-in.	48 to 44	23 to 27
Steel, seamless		
2-in.	37½ to 32½	16½ to 11½
2½ to 3-in.	41½ to 36½	20½ to 15½
3½ to 6-in.	45	24
Wrought Iron, buttweld		
½-in.	+16	+46½
¾-in.	+ 9½	+39½
1 to 2-in.	— 1½	+28½
Wrought Iron, lapweld		
2-in.	+ 4½	+33
2½ to 4-in.	— 5	+21½
4½ to 6-in.	— 1	+26

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	19.18	22.56	18.60	21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	$106.70
6 to 24-in., del'd N. Y.	103.50 to 108.40
6 to 24-in., Birmingham	93.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	120.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

	(½ in. and larger) *Base per 100 lb*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 in. and smaller) *Pct off List*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	*Pct Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF_2 Content:	*Base price per net ton*
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% Fe. Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer	$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	31.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.40
Chromium, electrolytic, 99% min.	$3.50
Lead	28.00¢
Manganese	60.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	67.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 99%	$2.90
Zinc, 10 ton lots	17.75 to 22.25¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$15.00 to $15.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $17.50
Foundry, Byproduct	
Buffalo, del'd	$22.95
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	23.35
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	21.05
Swedeland, Pa., f.o.b.	21.00
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	$21.50 to 23.50
Cleveland, del'd	22.45
Cincinnati, del'd	21.50
St. Paul, f.o.b.	23.50
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Carloads, Per 1000
First quality, Pa., Md., Ky., Mo., Ill. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00

Grain Magnesite

	Std. ⅜-in. grains
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢: Missouri Valley, add 20¢	$12.25

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, per 100 lb.
(Metropolitan area delivery, add 15¢ to base, except New York, add 20¢)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$5.15- 5.71	$6.31- 6.57	$7.27- 7.52	$5.35- 5.66	$6.51	$5.37- 5.52	$5.09- 5.24	$5.35- 5.57	$6.16- 6.31	$9.14	$9.29	$10.54	$10.69
New York	5.40- 5.98	6.28- 6.43	7.25- 7.89	5.58- 5.88	6.48- 6.73	5.78	5.32- 5.58	5.53- 5.63	6.18- 6.38	9.17- 9.53	9.32- 9.68	10.40- 10.77	10.55- 10.92
Boston	5.48- 5.64	6.39	7.56- 7.83	5.54- 5.89	6.75- 6.79	5.74	5.39- 5.54	5.48- 5.59	6.24- 6.34	9.40- 9.44	9.55- 9.59	10.84- 10.94	10.92- 11.09
Baltimore	5.28	6.18	7.15- 7.38	5.34	....	5.53	5.33- 5.39	5.39	6.13	....	....	....	....
Chicago	4.85- 5.10	5.75- 5.95	7.10	4.85- 5.30	6.52- 6.68	5.10	4.90	4 90	5.70	9.35	9.60	10.80	11.05
Milwaukee	5.03	5.93	7.27	5.03	6.80- 6.86	5.28	5.08	5.08	5.88	9.38	9.63	10.83	11.08
Norfolk	5.75	....	....	....	....	6.00	6.00	6.00	....	....	....	....	....
Cleveland	4.98- 5.20	5.75[1]- 6.04[1]	7.18- 7.44	5.02- 5.65	6.70	5.35- 5.54	5.16- 5.42	5.15- 5.34	5.70- 5.95	9.14- 9.66	9.29- 9.89	11.05	11.30 ....
Buffalo	4.85	5.75	7.70	5.34	6.35	5.35	5.10	5.05	5.90	9.73	9.98	11.18	11.43
Detroit	5.20- 5.55	6.05- 6.50	7.70	5.25- 5.70	6.25- 6.55	5.50- 5.55	5.30- 5.37	5.30- 5.52	6.02- 6.07	9.31- 9.55	9.20- 9.47	10.72- 10.95	10.87- 11.10
Cincinnati	5.14- 5.36[8]	5.82- 6.21[8]	6.97- 7.65	5.25- 5.62[8]	6.31	5.50- 5.71[8]	5.30- 5.47[8]	5.30- 5.62[8]	6.06- 6.17[8]	9.31- 9.35	9.50- 9.51	10.75- 10.76	10.90- 10.91
St. Louis	5.19	6.04- 6.09	7.29- 7.64	5.19- 5.79	6.49	5.39- 5.44	5.24	5.24	6.04	9.69	9.94	11.14	11.39
Pittsburgh	4.85- 4.90	5.75[1]	7.15	5.00- 5.35	5.95	5.05- 5.25	4.90- 5.15	4.90- 5.10	5.65- 5.80	9.35	9.60	10.40	10.55- 10.80
St. Paul	5.44	6.34	7.33- 7.74	5.44	....	5.69	5.49	5.49	6.29	9.94	10.13	11.39	11.64
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Birmingham	5.05[1]	....	6.45	5.05[11]	6.68	5.25[11]	5.00[11]	5.00[11]	6.66	....	....	....	....
Houston	6.40	....	8.80	6.75	....	6.35	6.20	6.40	7.60	9.80	9.65	10.75	10.95
Los Angeles	6.30- 6.40	7.85[1]- 7.90	7.95- 8.90	6.60- 6.66	9.35[5]	6.10- 7.40	5.75- 5.90	6.05	7.85[15]- 8.45	10.90	10.85	12.40	12.65
San Francisco	5.95[8]	7.15[2]	8.25- 8.90	6.75[8]	8.25	6.30- 7.60	5.90- 6.90	5.90	7.55	10.90	10.85	12.40	12.65
Portland	6.50[4]	8.00[2]	8.15[2] 8.45[2]	6.85[4]	....	6.30[4]	6.25[4]	6.25[4]	8.25[4]	....	10.45[15]	....	12.05[15]
Seattle	6.20[4]- 6.30[4]	7.75[2]- 7.85[2]	7.65- 8.00	6.55[4]- 6.65[4]	....	6.20- 6.30	6.15- 6.25	6.05[4]- 6.15[4]	8.00[14]- 8.10[14]	....	10.30[15]- 10.40[15]	....	12.00[15]- 12.05[15]
Salt Lake City	7.05- 8.00	8.20	7.90- 9.06	7.10- 7.59	....	5.75- 6.65	6.65- 7.00	6.95- 7.25	7.55- 8.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED:

Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED:

Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS:

1000 to 1999 lb.

GALVANIZED SHEETS:

450 to 1499 lb.

EXCEPTIONS:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight nor the 6 pct increase on total freight charges in the Eastern Zone (5 pct Southern Zone, 4 pct Western Zone), effective Jan. 11, 1949.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malle-able	Besse-mer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	42.88	43.38	.....	.....	.....
Buffalo	47.00	47.00	47.50	.....	.....
Chicago	46.00	46.00	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	.....	52.75	53.25	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	62.00	62.50	.....	.....	.....
Lone Star, Texas	.....	75.00†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Provo	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malle-able	Besse-mer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	52.75	53.25	.....	.....
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Brooklyn	Bethlehem	3.90	51.90	.....	.....	.....	.....
Cincinnati	Birmingham	6.09	48.97	49.46	.....	.....	.....
Jersey City	Bethlehem	2.39	50.39	.....	.....	.....	.....
Los Angeles	Provo	6.93	52.93	53.43	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	49.03- 48.53	49.53- 49.03	49.53	50.03	54.03 .....
Philadelphia	Bethlehem	2.21	50.21	.....	.....	.....	.....
Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	.....
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.81
San Francisco	Provo	6.93	52.93	53.43	.....	.....	.....
Seattle	Provo	6.93	52.93	53.43	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....

† Low Phos, Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$59.50; f.o.b. Buffalo, $60.75. Add $125 per ton for each additional 0.50 pct Si up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $66.00 per gross ton, f.o.b. Lyles, Tenn. Delivered Chicago, $73.78. High phosphorus charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$162
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$160
F.o.b. Johnstown, Pa.	$162
F.o.b. Sheridan, Pa.	$160
F.o.b. Etna, Pa.	$163

$2.00 for each 1% above 82% Mn; penalty, $2.00 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.0
Ton lots	11.6
Less ton lots	12.5

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$61.00	$62.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Ci	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C.

Carload bulk	8.60
Ton lots	10.25
Briquet, contract basis, carlots, bulk delivered, per lb of briquet	10.0
Ton lots	11.6
Less ton lots	12.5

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, openhearth $84.00, foundry, $85.00; $84.75 f.o.b. Niagara Falls; Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50 pct. Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	18.50
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carload	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium—Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60.65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25%Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Molybdenum oxide briquets, f.o.b. Langeloth, Pa., per pound contained Mo.	95¢
Ferrotitanium, 40%, regular grade, 10% C max., f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	$1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	8.90¢
Ton lots	9.80¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00
Ton lots, packed	11.25
Less ton lots	11.75

Boron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0,50% max. C, 1 in. x D.	
Ton lot	$1.20
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. X D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25